**U.S. Army Research Institute
for the Behavioral and Social Sciences**

Research Report 1923

**Assessing Soldier Individual Differences to Enable
Tailored Training**

Peter S. Schaefer
U.S. Army Research Institute

Nic Bencaz
Cognitive Performance Group

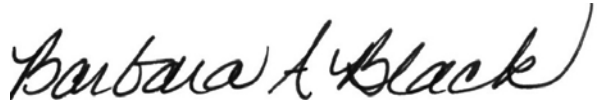**Mike Bush and Don Price**
Dynamics Research Corporation

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Authorized and approved for distribution:

BARBARA A. BLACK, Ph.D.   MICHELLE SAMS, Ph.D.
Research Program Manager   Director
**Training and Leader Development
  Division**

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14. ABSTRACT *(Maximum 200 words)*:

Tailoring training can improve training effectiveness and efficiency. However, before informed decisions can be made about tailoring training in U.S. Army institutional settings, decision makers must know which individual differences are relevant to learning in those settings. To that end, instructors at the Ft. Rucker, AL Warrant Officer Candidate School (WOCS) were interviewed to determine which individual differences predict Soldier academic performance. Other individual differences were selected by the research team on the basis of hypothesized relationships between experiences and course demands. Instruments created to measure those individual differences were reviewed and approved by the WOCS instructors. The instruments were then administered to two classes (more experienced vs. less experienced military persons, total $N = 157$) of WOCS students. The ability of the instruments to predict academic performance was then assessed. Which IDs predicted academic performance varied with class type. Implications for future tailored training research are discussed.

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Individual Differences, Academic Performance, Tailoring Training, Performance Prediction, Warrant Officer

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Peter S. Schaefer
U.S. Army Research Institute

Nic Bencaz
Cognitive Performance Group

Mike Bush and Don Price
Dynamics Research Corporation

ARI – Fort Benning Research Unit
Scott E. Graham, Chief

ASSESSING SOLDIER INDIVIDUAL DIFFERENCES TO ENABLE TAILORED TRAINING

EXECUTIVE SUMMARY

Research Requirement:

The operational tempo of the United States Army has increased dramatically, placing a premium upon quality of training, defined as training effectiveness and/or efficiency. For decades researchers have explored the extent to which training quality can be improved by tailoring training, defined as assessing learning-relevant individual differences and assigning learners to optimal learning conditions based on those differences. This research has been largely confined to academic research, however. Before informed tailored training in U.S. Army institutional settings can take place, researchers must know what individual differences are related to course performance.

Procedure:

Instructors from the Warrant Officer Candidate School (WOCS) at Fort Rucker, Alabama were interviewed to determine what individual differences, in their experience, predict academic success in the WOCS course. Based on those interviews, three individual differences dimensions (initiative, attention to detail, and metacognition) were chosen. Other individual differences were selected by the research team on the basis of hypothesized relationships between experience and course demands. A set of instruments measuring those individual differences as well as demographic information was constructed and given to the instructors to review. Upon instructor approval, the packet was then administered to a 5-week (consisting of Soldiers with more time in service) and a 7-week WOCS class (total $N = 157$). The student responses were then statistically compared with end of course grades to determine the predictive validity of the instruments.

Findings:

Differences between the 5-week and 7-week classes necessitated separate regressions. For the 5-week class, only one demographic variable and none of the instructor-provided IDs correlated with academic performance. For the 7-week class, two of the demographic items and two of the instructor-provided individual differences (one significantly and one marginally) predicted academic performance. However, correlations between the predictor and criterion variables would have to be stronger to serve as a basis for tailoring training. On the other hand, the demographic items are easy to administer and the gain in prediction may be judged worth the effort. Possible reasons for the moderate predictive power of the individual differences were proposed, and recommendations for future tailored training research were given.

Utilization and Dissemination of Findings:

This report is the first in a planned series exploring tailored training in institutional U.S. Army classroom settings. Future reports will build upon the lessons learned herein. These

findings were briefed to WOCS course instructors and the Commandant of the Warrant Officer Career College at Fort Rucker, AL.

ASSESSING SOLDIER INDIVIDUAL DIFFERENCES TO ENABLE TAILORED TRAINING

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**ASSESSING SOLDIER INDIVIDUAL DIFFERENCES TO
ENABLE TAILORED TRAINING**

Introduction

In recent years, the operational tempo of the U.S. Army has increased dramatically. Soldiers are required to learn more in less time, placing a premium upon effective and efficient training. However, there is ample evidence that learning-related individual differences exist (Thorndike, 1985; Jensen, 1998) and that these individual differences can interact with learning conditions (McNamara, Kintsch, Songer, & Kintsch, 1996).

We also know that Soldiers vary in ways that are relevant to their course performance. For example, Soldiers who use digital systems in deployment settings often vary in amount of prior training on those systems (Bink, Wampler, Goodwin, & Dyer, 2008). Secondly, ample evidence exists that tailoring training—that is, leveraging knowledge of individual differences (including amount of prior training, Kalyuga, Chandler, Tuovinen, & Sweller, 2001) can improve the effectiveness of training (Kalyuga, Ayres, Chandler, & Sweller, 2003; Kalyuga, Chandler, & Sweller, 1998; Kalyuga & Sweller, 2004; Lee, Plass, & Homer, 2006).

For tailored training to be beneficial, however, at least two criteria must be met. First, there must be some evidence demonstrating a reliable and practically significant relationship between one or more individual differences and one or more aspects of performance. Second, there must be evidence of an interaction between one or more individual differences and the learning situation (Pashler, McDaniel, Doug, & Bjorn, 2009).

The goal of the current report was to meet the first criteria, that is, to isolate individual differences which predict overall academic performance in a military course (here, Warrant Officer Candidate School, or WOCS). To that end, we defined individual differences in a broad sense, to include background experiences (e.g., length of service in the military, combat experience, and leadership position) as well as more traditional psychological constructs like goal orientation or metacognition. Such individual differences can be elicited by a broad range of methods, including demographic and biodata items as well as psychological scales.

It must be noted, however, that satisfaction of the first criterion is a necessary but not sufficient condition for satisfaction of the second criterion. It is possible for individual differences to correlate with performance but not with learning situation. In other words, the individual difference by performance relationship may be invariant across a range of learning situations.

Similarly, decisions about how to best utilize predictor variable information to assess impact upon performance were hard to make in advance. Typically, a predictor variable is simply split into high/low categories and the mean performance differences arising as a result of that split are examined (Kalyuga & Sweller, 2004). However, the feasibility of such an approach is largely determined by statistical factors.

For current purposes, we decided on the following approach. First, the overall magnitude of relationship would be assessed by multiple regression and correlation. Second, learner groups would be determined on the basis of high/low splits on the predictor variables. How many to take into account at one time would partly be a function of how many predictable variables were found and partly a function of sample size constraints. With a modest sample size, it would not be feasible to consider a 2 x 2 x 2 approach. If significant mean performance differences were found, the analysis would stop there. If they were not found, the feasibility of extreme groups methods would assessed.

Although a detailed summary of the tailored training literature is beyond the scope of this report, we cite representative examples of individual difference by performance relationships and individual difference by learning condition interactions. The examples were chosen on the basis of robustness and number of replications.

Individual Differences and Performance

Evidence for the impact of individual differences upon performance is extensive. Two prototypical IDs which impact performance are cognitive abilities and prior knowledge. Ability is sometimes defined as the power to carry out some undertaking (Corno, Cronbach, Kupermintz, Lohman, Mandina, & Porteus, 2002). Perhaps the most researched cognitive ability is general mental ability (GMA). Defined as that dimension tapped to a greater or lesser extent by all intelligence tests regardless of content (Gottfredson, 1998), GMA predicts occupational and academic performance in both civilian and military settings (Schmidt, Hunter, & Outerbridge, 1986; Thorndike, 1985).

Prior knowledge or knowledge of facts and principles required for successful performance (Schmidt, Hunter, & Outerbridge, 1986; Chen & Paul, 2003) has been the focus of much recent research. Prior knowledge interacts with learning conditions in ways reminiscent of general mental ability (Corno & Snow, 1986). In some settings, prior knowledge is an even better predictor of performance than general mental ability (Schmidt & Hunter, 1993).

Individual Differences and Learning Condition Interactions

General mental ability and prior knowledge have, therefore, have been shown to impact performance. Both have also been shown to interact with learning condition (Goska & Ackerman, 1996; Kalyuga, Chandler, & Sweller, 1998). We provide an example of each interaction below, although many other findings could be cited (see Ackerman, 2003; Corno et al., 2002; Jones, 1948; Kalyuga, Chandler, Tuovinen, & Sweller, 2001; Snow, 1991, 1992; Snow & Swanson, 1992; Sweller & Cooper, 1985).

Goska and Ackerman (1996) explored interactions between GMA and learning condition. The dependent variable was performance on the Kanfer-Ackerman Air Traffic Controller (ATC) task, a complex simulation requiring individuals to accept planes into a holding pattern, integrate them with planes already in the holding pattern, and land planes on appropriate runways.

The authors cite Sullivan (1964), who posited that transfer of training is a joint effect of similarity between the target and transfer tasks and the level of general ability of the learner. Higher ability learners were thought to learn the core concepts in a more context independent way and thus to be able to perform better in far transfer conditions than low ability learners. Another way of stating this is that the low ability learners require more scaffolding (which is minimized in far transfer tasks) than high ability learners. As the similarity between target and transfer tasks decreases—that is, as near transfer tasks become medium and far transfer tasks— the correlation between ability and performance should increase.

In the first experiment, participants were given several measures of general mental ability and then randomly assigned to either a short training condition or a long training condition. In both training conditions, participants completed mini-trials, defined as strictly timed exposure to the ATC task. In the short training condition, participants completed 30 mini-trials of approximately 25 seconds each. The long training condition was identical except that participants completed 60 mini-trials. All participants then completed six 10 minute 'full-task' ATC trials. Correlations between ability and performance on the full-task ATC trials were almost uniformly higher in all six 10 minute full-task ATC trials for the short training condition than for the long training condition. However, because these differences did not reach statistical significance, a stronger manipulation was attempted in the next experiment.

In the second experiment, two different training tasks were used to manipulate distance of transfer. The first training condition was a replication of the mini-trials used in the former experiment. This was considered a near-transfer condition. A more distant transfer condition was used by giving learners direct practice on only the motor requirements of the ATC task. Although learners were exposed to the rules of the ATC task, absorbing these rules was not required for successful performance in the training condition. Lower ability learners might be able to learn just the procedural rules, while higher-ability learners should be able to both benefit from direct practice on the motor requirements and absorb the ATC rules. Thus, the general mental ability by performance correlation was expected to be higher in the far transfer condition. Results supported the prediction. General mental ability was a better predictor of performance in the far transfer than in the near transfer condition. The authors offer possible explanations for this pattern of results. One explanation is that higher ability allows learners to 'decontextualize' important facts about a situation and thus apply them to more dissimilar situations. Another explanation is that higher ability individuals learn more in less time. If the second explanation is correct, this suggests that more extensive initial training for lower-ability learners would help bridge the gap.

Examinations of prior knowledge and learning condition have focused upon so-called expertise reversal effects, or EREs. An ERE occurs when treatments beneficial to novice learners become deleterious as experience increases (Kalyuga, Ayres, Chandler, & Sweller, 2003). Kalyuga, Chandler, and Sweller (1998) examined the interaction of prior knowledge and item presentation. The authors discuss the example of a geometric proof, consisting of a diagram and associated informational statements. The diagram and the informational statements could be displayed either integrated or separately. A phenomenon known as the split-attention effect would predict that performance should be better in the single display condition, as displaying the information separately would require learners to mentally integrate information, increasing

cognitive load. The redundancy effect would predict that showing the information displays and diagram in separate displays would increase performance because cognitive load is also induced by having to mentally filter out redundant information. (This of course presupposes that information in the statements overlaps with information in the diagram.)

The authors hypothesized that prior knowledge would determine which display would induce superior performance. Low prior knowledge learners were predicted to perform better in the integrated display condition, as they would be unable to extract important information from the diagram alone. In addition, the split displays would force the low prior knowledge learners to mentally integrate information (split-attention effect). This would theoretically impose an undue burden upon the working memory of low prior knowledge learners whose cognitive systems are already straining to absorb novel information.

High prior knowledge learners were predicted to perform better in the single display condition. The information in the diagram alone would be sufficient for successful performance, and as the overlapping information in the statements was in a separate display, the high prior knowledge learners could simply ignore the statement display. In contrast, the integrated display would contain information in both the diagram and the informational statements. Cognitive load is increased by having to filter out irrelevant or redundant information (redundancy effect).

The results bore out these hypotheses. In the first experiment, novice mechanical apprentices learning circuitry benefitted more from the integrated display than separate displays. In the second experiment, novice mechanical apprentice performance was measured at the beginning of training and again after a certain amount of learning had transpired. The anticipated expertise reversal effect was demonstrated. In the beginning stages of learning, the integrated display was superior. In the later stages of learning, separate displays were superior.

Method

There are several means by which individual differences relevant to performance in a particular setting can be identified. One approach is to simply pick a domain that is well-defined and has standardized, well-accepted measures of achievement (e.g., algebra or chemistry; Kalyuga & Sweller, 2004; Lee, Plass, & Homer, 2006). Another method would be to administer demographic and individual difference measures to large numbers of people and empirically determine performance correlates.

However, neither option is viable when dealing with applied research in military courses. As military courses are designed to instill a variety of skills and kinds of knowledge, there are often no standardized, well-accepted measures of achievement apart from classroom performance itself. Thus, the pre-course assessment of achievement is problematic. Further, time constraints prevent mass administration of instruments.

Rather, what is needed is an approach that narrows the search for relevant individual differences, and uses empirical methods to assess the relationship between class performance and the proposed individual differences. The decision was therefore made to interview experienced course instructors for the purpose of identifying relevant correlates of performance. There is

evidence that experienced instructors are reasonably accurate in assessing achievement (Hoge & Coladarci, 1989). Further, course instructors are familiar with course content and course demands in ways that even prior students are not. It was therefore reasonable to infer that instructors would develop the ability to both informally assess achievement and perceive what Soldier characteristics correlated with course performance.

This approach is not new. A job-analytic technique known as competency modeling (McClelland, 1973) utilizes interviews to determine individual characteristics needed for effective performance (DuBois, 1999). The key difference is that in the research reported here the technique was applied to classroom performance. The technique was used to devise interview questions for course instructors. The questions assessed the instructors' teaching and military experience, clarified information gleaned from the Program of Instruction (POI) materials, and captured instructor perceptions of performance-relevant individual differences.

Course Selection

Initially, there were five candidate courses. The candidate courses were Enlisted Initial Entry Training, Warrior Leader Course, Advanced Leaders Course, Senior Leaders Course, and Warrant Officer Candidate School. Eventually, the Warrior Leader Course and Warrant Officer Candidate School (henceforth WLC and WOCS) were chosen, primarily because these classes tend to have relatively large class sizes (approximately 74-100 per class for WOCS) and they are non-MOS (Military Occupational Specialty) specific. The former is relevant to statistical power, and the latter to range of individual differences among the students. However, after initial coordination was conducted with the WLC staff at Fort Benning, Georgia, the Training and Doctrine Command (TRADOC) initiated sweeping changes in the WLC POI. This changed the course from four weeks to two and this, in conjunction with content changes, made it impossible to continue research with WLC. As a result, WOCS became the source for all research participants.

Description of Warrant Officer Candidate School. The WOCS is the level one Basic Officer Leadership Course (BOLC) for Army warrant officers. The course addresses the transition from junior enlisted or noncommissioned officer (NCO) leadership to prospective Army warrant officer by inculcating the Soldier with leadership skills and abilities expected of his or her new status as a warrant officer. Leadership lessons are embedded throughout WOCS, including exercises in tactical application during a five-day field leadership exercise. WOCS consists of two phases.

Phase I of WOCS is available as either distributed learning or resident training. Sergeants who have completed the WLC must complete Phase I via distance learning within one year of enrolling in the course and prior to attending the Phase II resident portion of WOCS. Attendance at the Phase 1 (Resident) course of two weeks duration is mandatory for all Soldiers in the grade of Private through Corporal, and for Sergeants who have not completed the WLC. Thus, WOCS is already tailored to take into account initial differences among Soldier background and experience. Phase I trains the warrant officer candidate in ethical leadership, Army operations and tactics, effective communication, military history, structure of the Army, warrior tasks and battle drills, and field leadership applications. The course introduces a high

stress environment designed to challenge the warrant officer candidate. Additionally, it is used to evaluate and develop the candidate's potential as a US Army warrant officer, while providing the basic skills necessary to meet future Army challenges.

Phase II of WOCS is a five-week final resident phase of instruction for those in either the prerequisite resident or nonresident phases. In this stage, the training emphasizes experiential learning methods, engaging the candidates via various applications and increasing the level of physical and academic stress. Instructors provide continuing progressive training in written communication, ethical conduct and leadership, military operations, warrior tasks, and total fitness. Oral communication, problem solving, and critical thinking applied to the analysis of military history are also taught. Student activities include a five-day field exercise.

WOCS has a relatively large throughput of students (approximately 74-100 Soldiers every five to seven weeks), which supported our instrument development process and suggested the feasibility of generating alternative means of training Soldiers who possess varying knowledge and skill sets. It is not an MOS-specific course, and addresses a training audience with a broad range of knowledge, skill, and experience bases as a result of prior military duties. WOCS also trains Soldiers from other branches of the service besides the Army. In addition, a portion of the WOCS Soldier population consists of recent graduates of enlisted Initial Entry Training who will follow their WOCS training with the Aviation Warrant Officer Basic course (WOBC) followed by Warrant Officer Flight Training (WOFT), offering a wider range of prior military and civilian experience within the WOCS student population. These individuals are referred to by the Warrant Officer Career College (WOCC) staff as "street-to-seat" candidates as they come in virtually off the street and wind up in the seat of a helicopter. Finally, a substantial portion of the WOCS training focuses on cognitive skills (e.g., problem solving and critical thinking) that are instructed using experiential training approaches.

Participants

Participants in this research were 182 WOCS students, three Training, Advising, and Counseling (TAC) officers, and three academic instructors. The WOCS students were drawn from two different classes, a 5-week ($n = 97$) and a 7-week ($n = 85$) class. Of the 182 participants, only 157 were able to be used for analysis, resulting in smaller sample sizes for both the 5-week ($n = 67$) and the 7-week ($n = 90$) classes. The sample size diminished due to attrition in the course, individuals wishing to remove themselves from the study, and missing data. The 7-week class is composed of Soldiers in the grade of Private through Corporal, and Sergeants who are not WLC graduates. The 5-week class is composed of Sergeants and above who generally have more military experience than those in the 7-week class.

Procedure

An initial meeting was held to interview both TAC officers and academic instructors. (Unless otherwise specified, both types of teachers will henceforth be referred to as instructors.) Interview questions were sent to all potential interviewees before arriving on post. (See Appendix A for interview protocol.) Interviews were all performed individually and began by

explaining that our research goal was to identify four to six aptitudes that differentiated high and low performing Soldiers for these particular classes. The team also explained that aptitudes identified through these interviews would be used to develop measures of Soldiers' variations in the knowledge, skills, or experiences named. Each interview lasted approximately 45 minutes, and all interviews were voice recorded for later transcription and analysis.

After analyzing all course materials, interview transcriptions, notes and discussions with the research team, an initial list of nine aptitudes was established. The list was further narrowed to three individual differences most clearly indicated by instructor feedback. The final IDs decided upon were Initiative, Attention to Detail, and Metacognition.

Instructors stated that neither MOS nor experience directly predicted course success, and that much is left to personal initiative and drive. One WOCs instructor said that when trying to pick out someone who is going to be successful in the course "We look at who took initiative on the first Army Physical Fitness Test". Based upon instructor comments, initiative was operationally defined as "taking prompt action to accomplish objectives; taking action to achieve goals beyond what is required; being proactive."

Instructors also mentioned that those individuals who paid attention to detail tended to be successful in the course. One WOCS instructor said "Definitely the legal administrators and the military intelligence guys really impressed me when they come through the course, they really do, because they pay attention to detail all the time". Attention to Detail, operationally defined as "ensuring that one's own and other's work and information are completed and accurate", thus became our second individual difference.

Finally, instructors mentioned that students who are able to critically analyze their own performance and improve upon their mistakes do well in the course. In fact, when asked if the self-assessments of stellar performers correspond well to peer-assessments of the same stellar performers, one particular WOCS instructor simply answered "Absolutely, very accurate." The ability to accurately assess one's own performance is an aspect of Metacognition, our third competency. Metacognition implies that an individual exerts self-regulatory "control over his or her cognitions" (Ford, Smith, Weissbein, Gully, & Salas, 1998, p. 220), and involves skills of planning and monitoring as well as evaluation of one's progress during task completion (Brown, Bransford, Ferrara, & Campione, 1983; Schraw & Moshman, 1995).

An initial instrument packet was created and provided to the instructors who had been interviewed. Instructors were asked to assess whether the items tapped the instructor-identified IDs, what needed to be added to the instrument packet, and whether the instrument items were appropriately targeted to the Soldier groups from the standpoint of language and experience. Minor revisions were made based on their feedback.

Two separate trips were made to administer the finalized measures to the WOCS students. To ensure that the measures were gathered at equivalent points in the courses, this occurred at the end of the first week for the 5-week class and at the end of the third week for the 7-week class. A brief written and verbal description of the project was given, followed by an assurance that any information gathered would be confidential and would not have any impact on course grade. Next, instrument packets were passed out along with an informed consent form.

Students were told that participation was voluntary and that those who chose to continue must agree to and sign the informed consent sheet (see Appendix B). It was explained that confidentiality of student responses was insured by using roster numbers rather than names. Students were given 90 minutes to answer all measures, and instrument packets were returned to the research team upon completion.

The criterion variable was academic performance, operationalized as the average of three academic tests given throughout the course. Overall WOCS performance is actually a composite variable derived from academic performance (as defined above), leadership, and a physical training (PT) score. However, it was quickly determined that leadership is hard to assign a numerical score to which all can agree, thus introducing the possibility of measurement error. We also judged that the IDs elicited from instructors were prima facie more related to academic performance than PT. We therefore focused upon the academic performance component as our criterion variable.

Once the data were analyzed and the analysis discussed among the research team, the results were formally presented to WOCS course instructors and the Commandant of the Warrant Officer Career College at Fort Rucker, AL. One final interview was conducted with the TAC officers and Academic instructors. The purpose of the final meeting was to obtain the TAC Officers' and Academic instructors' recollections of those students who completed the measures and compare their subjective ratings with actual class rankings. This allowed the research team to investigate how accurate instructors can be at identifying the top students early on and what other methods might be employed to obtain these estimates sooner.

Measures

Demographic questionnaire. A demographic questionnaire was created to obtain roster numbers as well as basic information that could potentially serve as performance predictors. The selection of these demographic variables was determined on a rational rather than empirical basis. Questions focused upon education level, combat experience, rank, and service time (see Appendix C.)

The demographic questions were chosen on the basis of WOCS course content and the nature of the criterion (academic performance). Consider first WOCS content. The WOCS course, as described above, focuses upon battle drills and warrior tasks. It is reasonable to assume that the extent to which Soldiers perform well on such tasks in the course is partly a function of their prior experience with those tasks. It was reasonable to infer that prior experience with those tasks might be tapped indirectly through judiciously chosen demographic questions. For example, one of the instructors interviewed indicated that the Attention to Detail individual difference was quite noticeable among persons with a legal background. Therefore, an MOS question might be related to performance in the course. Length of service and rank might serve as rougher but useful measures of experience which might also be expected to impact WOCS course performance.

The second consideration, the nature of the criterion of academic performance, led us to choose items which tapped prior academic experience and performance. Examples include

asking students their level of education (options ranging from some high school to doctoral degrees) and the names of prior military courses completed.

Experience measures. In addition to demographic information, prior life experiences were examined using two questionnaires. These measures were hypothesized to predict course performance based on information provided by military subject matter experts and additional data gleaned from instructor interviews. We used two different measures to tap experience for the simple reason that experience is one of the prime determinants of domain knowledge, and domain knowledge largely determines performance, both in jobs and academic courses (Schmidt & Hunter, 1992). It should be stressed that we measured experience in a different fashion than that used by Schmidt and Hunter. Instead of using self-reported length of experience (months or years) we were interested in isolating more specific aspects of experience which might impact performance.

The first questionnaire was a 19-item measure created by the research team (see Appendix D). This measure used a Yes/No format where "Yes" answers would be followed by more detailed questions pertaining to that item. An example item from this measure read: "Do you find yourself thinking of new ways to improve products or processes? [If Yes] Did you suggest these changes?" Several of the items used acted as a secondary check on uncovering relationships with our three individual differences. For example, students were asked if they had ever performed assignments that fell outside of their MOS description. In the prior questionnaire, they were also asked if they had ever held a job atypical of their MOS.

The second questionnaire was a 15-item measure adapted from an assessment battery of cognitive and decision making skills (Chiara, Zacarro, & Pang, 2009, Appendix A). Items were measured using a 7-point Likert scale with response anchors of 1 = "Not at all" to 6 = "Very often" (see Appendix E). An example item from the scale read: "How often have others praised your ability to pull information together quickly?". The mean scale score for each individual was used as the predictor variable.

Initiative. Initiative was estimated using two measures, a 13-item Goal Orientation Scale (Vandewalle, 1997), and a 3-item Situational Judgment Test created by the research team. Within the Goal Orientation Scale (see Appendix F), items used a 6-point Likert scale with response anchors of 1 = Strongly Disagree to 6 = Strongly Agree. An example item from the scale reads "I often look for opportunities to develop new skills and knowledge." Learning Goal Orientation involves developing competence by acquiring new skills and mastering new situations (Dweck & Leggett, 1988). Enhancing one's self-development is seen as a type of proactive behavior, and individuals with a higher learning goal orientation are more likely to engage in such behaviors in order to foster learning (Farr, Hofmann, & Ringenbach, 1993).

The Situational Judgment Test (see Appendix G) was created from critical incidents and other information gathered in interviews with instructors. Each of the situations as well as all answer choices were validated by the instructors acting as subject matter experts. Three WOCS-related situations were given to students, each with four response options where only one answer correctly represented taking initiative. Scores were calculated by summing the total number of correct items chosen, with three as the highest possible score. An example answer choice read:

"It is hard for anyone to admit their own shortcomings, but you swallow your pride and accept the criticism. You tell yourself and others that you are committed to make improvements." This particular type of test was used because it has proven to be an efficient way to measure individual differences with strong criterion and face validity (Lievens, Peeters, & Schollaert, 2007).

Attention to detail. This measure was obtained using a modified Operations Order approved by class instructors (see Appendix H). Here, students were asked to identify and correct as many errors as they could find. Errors came in two forms: those which novices or 7-week students should detect (grammatical errors), and those which 5 week-individuals should detect (doctrinal errors). Scores were calculated by summing the total number of errors properly identified and corrected, with 10 as the highest possible score. The reason for using an Operations Order was to provide a document that closely resembles material students must be familiar with and would normally encounter during WOCS.

Metacognition. This competency (see Appendix I) was measured using the 52-item Metacognitive Awareness Inventory (MAI). Items were measured using a 6-point Likert scale with response anchors of 1 = "Strongly Disagree" to 6 = "Strongly Agree". An example item reads: "I ask myself questions about how well I am doing when I am learning something new." Metacognition has proven to be a strong predictor of academic success (Dunning, Johnson, Ehrlinger and Kruger, 2003; Kruger and Dunning, 1999), and the MAI has strong reliability and validity (Schraw & Dennison, 1994).

Academic performance. Academic performance, as noted above, was operationally defined as the average of three academic tests given at approximately equal intervals throughout the course. We chose academic performance because of the nature of the individual difference dimensions suggested by the instructors.

Analysis Strategy

All analyses were conducted on SPSS 14.0 for Windows, and the alpha level for significance set at .05 for all tests. (As this is an exploratory analysis, all p values should be treated with caution. We chose to report p values for sake of completeness, but did not adjust for family wise error rate. Any confidence in the strength of the relationships found should be tempered in the absence of replication.) In analyzing the data, the following 3-stage strategy was used.

Stage 1. One of the first decisions we had to make was whether to treat the two classes separately or to pool them together. On the one hand, the goal of this research was to estimate the predictive validity of the individual difference measures administered. This would argue for pooling the classes together to increase sample size. On the other hand, the Warrant Officer Career College (WOCC) staff used two different courses because they were aware of pre-existing differences between the two populations (e.g., in military experience). Further, these differences between populations might involve different relationships between predictor and criterion variables. If this was so, then the homogeneity of regression assumption would be

violated. Therefore, in Stage 1 the relationships between and among individual differences and performance as a function of class type were examined in the following manner.

First, all predictor variables were examined for differential response rates (operationally defined as any item to which more than 80 percent responded either 'yes' or 'no') or other issues. If differential response rates or other problems were present, the item was dropped from further analysis and a rationale for the decision given. Second, correlation matrices (one for each class) containing all remaining variables were then constructed. The matrices were then visually scanned for overt pattern differences. Special attention was paid to the individual differences suggested by the instructors, based on their familiarity with the course demands and past students. Third, principal components analyses of the respective correlation matrices were then conducted to help simplify and aid in describing pattern differences. Once these analyses were completed, a decision was made whether to analyze both classes together or separately. Dissimilarities in correlational patterns and/or dissimilarities in principal component structure would argue for separate analyses. In either case, reliability estimates for the individual difference scale measures (i.e., Previous Experience Scale, Learning Goal Orientation, Attention to Detail, MAI) were based on the entire sample.

Stage 2. In Stage 2, regression equations consisting of all predictor variables significantly correlated with academic performance ($p < .05$) were constructed (separately for each class or both classes together, depending on the outcome of Stage 1). As this was an exploratory data effort, regressions were computed in both simultaneous and stepwise fashions. This allows for an estimate of maximum predictability when retaining all performance related variables, and the explanatory power of a select subset of those predictors.

Stage 3. The predictor variables retained in the stepwise regression were used to create competency categories. In essence, this involves dividing students into high/low groups on the predictor variables and seeing how average performance differs. This approach is used quite often in research investigating individual difference by treatment interactions (Kalyuga & Sweller, 2004). Typically, this is done using only one or two individual differences at a time (however, see Peterson, 1979). In the interaction research, the purpose is to verify the relationships between individual differences and treatment conditions. As treatment condition was not manipulated in this research, the goal is more modest: to assess the utility of using these predictor variables in predicting average academic performance between groups.

Results

To improve readability, only summary statistics (e.g., range, mean, standard deviation) are given in the text. In the case of more complex response patterns, a verbal summary is provided. When the phrase 'many respondents' is used, this means that more than 50% of the respondents had answered a question in a given way. When the phrase 'most respondents' is used, this means that more than 80% of the respondents had answered in a given way, and that by the pre-defined differential response rate rule given above, the item was excluded from further analysis. (More detailed descriptive are provided in Appendix J.)

Stage 1

        All variables (i.e., predictor variables and criterion) were examined both descriptively and graphically. When a decision was made to exclude a variable from further analysis, this is explicitly stated and a reason for that decision given. Variable are examined in the order in which they appear in the Appendices and in which they were described above.

        Academic performance. Class grades in the overall sample ranged from 72.67 to 96.67 ($M = 86.33$; $SD = 4.93$). This is obviously a rather truncated range (i.e., without failing any grades), which has implications for correlations. Despite this narrow range, however, the grades were normally distributed both within each class and when pooled together, as revealed by histograms. The 7-week class ($M = 86.99$, $SD = 4.92$) performed better academically than the 5-week class ($M = 85.43$, $SD = 4.84$), $F (1, 155) = 3.96$, $p < .05$. The statistical significance of this comparison was as much a function of the narrow confidence intervals around each mean as a function of effect size, which was negligible. However, this result does underscore the fact that WOCC personnel were correct in treating the two populations as distinct. In and of itself, though, it does not argue for separate analyses of the two classes.

        Demographic questionnaire. All items in the demographic questionnaire were examined for problems. As stated above, decisions to exclude variables from subsequent analyses are clearly stated and defended.

        Rank. Student rank included Private and Corporal through Sergeant First Class, with the most common rank being Sergeant. There were no Soldiers ranked Private E-2 or Private First Class.

        Military Occupational Specialty (MOS). The most frequently reported MOSs were Mechanical Maintenance ($n = 28$), followed by Aviation ($n = 18$), Signal Corps ($n = 15$), and Infantry ($n = 12$). There was a wide range of MOSs given, with many MOSs covering only a few individuals. Therefore, this variable was not retained for further analysis.

        Months in service. Soldiers were asked to indicate their total length of service in months. Follow-on questions asked about the type of service (active, reserve, or National Guard) as well as the duration in months of each kind of service. Total number of months in service ranged from 3 to 299 ($M = 86.52$, $SD = 68.25$). The vast majority of service time was spent in active status, with relatively few individuals reporting time spent in reserve or National Guard status. Therefore, only total time in service was retained.

        Military education. When asked to list military courses attended prior to enrolling in WOCS, respondents listed multiple answers. The most frequent responses were BNCOC ($n = 52$), WLC ($n = 42$), Basic Combat Training ($n = 14$), and Airman Leadership School ($n = 11$). There was a wide range of responses given, with many responses covering only a few individuals. To enable statistical analysis, this variable was recoded to reflect the total number of military courses taken by an individual. The number of prior military courses ranged from 0 to 9, with most Soldiers having taken between 0 and 3 courses.

Civilian education. Possible responses ranged from 1 = 'Some High School' to 6 = 'Doctorate Degree'. Actual responses ranged from some High School to Master's Degree. The most frequent response was 'High School Graduate' and the most infrequent response was 'Master's Degree'.

Previous job atypical of MOS. Many respondents indicated that they had not held a job atypical of their MOS. A follow-on question asked respondents to describe the atypical MOS job. There was a wide range of responses given, with many responses covering only a few individuals. Therefore, only the initial question was retained for further analysis.

Most recent duty position/assignment prior to WOCS. The most frequent answer with 16 out of 138 responses (12%) was basic training. These former positions were held from 1 to 132 months ($M = 27$, $SD = 25.31$). There was a wide range of responses given, with many responses covering only a few individuals. Therefore, this variable was not retained for further analysis.

Leadership experience prior to WOCS. A wide range of positions was listed with platoon sergeant as the most frequently reported with 34 out of 157 respondents (22%). There was a wide range of responses given, with many responses covering only a few individuals. Therefore, this variable was not retained for further analysis.

Duty position/assignment as leader. Such a diverse set of answers emerged from this item that no one position/assignment arose as being reported most often. Again, there was a wide range of responses given, with many responses covering only a few individuals. Therefore, this variable was not retained for further analysis.

Combat or deployment experience. Many respondents had been deployed. Total time deployed ranged from 4 months to 108 months ($M = 19.43$, $SD = 13.64$). Out of the four deployment location options given, Iraq was by far the most frequently chosen. As there were so few responses to other locations, only the initial question was retained for further analysis.

Duty position/assignment for recent combat deployment. The positions ranged from military police and convoy commander to Squad Automatic Weapon (SAW) gunner. There was a wide range of responses given, with many responses covering only a few individuals. Therefore, this variable was not retained for further analysis.

Previous Duties, Responsibilities, and Experiences Questionnaire. This questionnaire inquired about prior civilian and military life experiences. Each was posed in a Yes/No format, with additional questions following any "Yes" response.

Have you made formal presentation to a group of people? Most respondents had made formal presentations before others (more than 93%), had done so before audiences familiar with the subject, and had been involved in developing and/or writing the material. Because so few individuals had not given formal presentations to others, this variable was excluded from further analysis.

***Have you been responsible for the actions of a group of people*?** Most respondents had been responsible for others (more than 91%), had been assigned to that position, had been responsible for five or more individuals, and had been in such a position for 24 months or more. Because so few individuals had not been responsible for the actions of others, this variable was excluded from further analysis.

Have you prepared briefings for management? Many respondents had prepared briefings for management. Answers to follow-on questions showed that of those who had briefed management, most respondents had also been involved in collecting and developing the material, had personally analyzed the information, and had made recommendations. As large majorities of the responses to the follow-on questions consisted of 'yes' answers (more than 88%), only the initial question was retained for further analysis.

Have you planned and/or executed training events? Many respondents had planned or executed training events. Of those who had planned or executed training events, most respondents had done so five or more times for both field/practical application and classroom exercises, had acted as the instructor, and had their training event leadership performance evaluated. Differential response rates to the follow on questions—combined with most respondents having acted as the instructor (more than 92%) led to only the initial question being retained for further analysis.

Are you fluent in more than one foreign language? Most respondents indicated 'no' to this question (more than 89%). Follow-on questions regarded the motivation for learning the languages (self-guided study, exposure due to family, or class requirements). Because so few individuals spoke more than one foreign language, this variable (including the initial question and all follow-on questions) was excluded from further analysis.

Have you had to perform assignments that fell outside of your MOS or job description? Many respondents had performed assignments that fell outside of the MOS/job description. Of those who had performed such assignments, most respondents had been asked to do so, had been required to learn something new, and had felt more comfortable working outside their area of specialization. As more than 83% of the responses to the follow-on questions consisted of 'yes' answers, only the initial question was retained.

Have you been a mentor? Many respondents indicated that they had been a mentor, with most respondents indicating that they had benefited from the experience, and that they had initiated the relationship. When asked to describe how they had benefited from the relationship, a great number of unique responses were generated, making pattern detection difficult. Differential response rates and large majorities of 'yes' responses to the follow-on questions (more than 92%) led to only the initial question being retained.

Have you had to analyze large amounts of data or information? Many respondents indicated that they had previously been required to analyze large amounts of data or information, with most respondents indicating that they had been skilled at doing so, that doing so required close attention to details, that they had done so on a familiar topic, that they had done so frequently, and that they had done so at least several times a week. Differential response rates

and large majorities of 'yes' responses to the follow-on questions (more than 82%) led to the retention of only the initial question.

Has your prior job performance been formally evaluated? Most respondents indicated that their prior job performance had been evaluated (more than 86%), that they changed their approach based upon feedback, and that they compared their performance level with that of others. Because so few individuals had not been formally evaluated in their prior job, this variable was excluded from further analysis.

Besides debriefings or AARs, do you ever review your own performance and think about how you could improve your performance next time? Most respondents indicated that they did review their own performance (more than 92%), were skilled at critiquing their own performance, and thought that thinking through new strategies improved performance. As so few individuals did not review their own performance, this variable was excluded from further analysis.

Do you like to receive feedback on your performance? Most respondents indicated that they liked receiving feedback on their performance (more than 97%), and that they actively sought it out. As so few individuals did not like receiving performance feedback, this variable was excluded from further analysis.

Have you held a leadership position? Most respondents indicated that they had held a leadership position (more than 96 %), that they had taken charge of a group in the absence of the leader, and that they had been selected as a leader. As so few individuals had not held a leadership position, this variable was excluded from further analysis.

Do you find yourself thinking of new ways to improve products or processes? Most respondents indicated that they did think of new ways to improve products or processes (93%), and that they personally suggested these changes. As so few individuals did not think of new ways for improvement, this variable was excluded from further analysis.

Do you regularly raise your hand in class? Many respondents said yes to this question. When asked to indicate why they raised their hands, the responses (from most frequent to least) were to raise comments, ask questions, and seek clarification. Because of large discrepancies in response rates in the follow-on question, only the initial question was retained for further analysis.

Do you regularly view an online professional forum, such as Army Knowledge Online or themotorpool.com? Many respondents indicated that they did visit an online professional forum. Most respondents who used the forum viewed the site at least several times a week, but did not contribute. As the number of respondents was much smaller to the follow-on questions, only the initial question was retained for further analysis.

Do you voluntarily participate in continuing education programs through the Army Education Center? Many respondents indicated that they did not participate in continuing education programs. Of those who did participate, many took 3 or fewer courses in a year. As

the number of respondents was much smaller to the follow-on questions, only the initial question was retained for further analysis.

Do you regularly write in a personal journal? Most respondents did not use a personal journal (more than 84%). Of those who did, the most common reason for keeping a journal was reflection on self and situation. As so few individuals did keep a personal journal, this variable was excluded from further analyses.

During your last marksmanship qualification, did you qualify as an expert? Many respondents indicated that they had not qualified as expert on their last marksmanship event.

Have you ever been an honor graduate in a military or civilian course? There was an almost even split among respondents over this question, with slightly over half saying no ($n = 79$ vs. $n = 78$).

Scale measures. As instrument reliability can impact statistical analysis, alpha coefficients are reported for all measures in addition to summary descriptive.

Previous Experience Scale. Coefficient alpha for the 15 items was 0.82. Scores ranged from 2.14 to 5.47 ($M = 4.01$, $SD = .63$, $N = 151$).

Learning Goal Orientation. Coefficient alpha for the thirteen items was .78. Scores ranged from 2.31 to 5.69 ($M = 3.95$, $SD = .61$, $N = 152$).

Situational Judgment Test. Coefficient alpha for the three items was low (.32). Scores ranged from 0 to 3 ($M = 1.78$, $SD = .95$, $N = 154$).

Attention to Detail (Operations Order). Scores ranged from 0 to 4 ($M = .92$, $SD = .86$, $N = 157$). The scores could have ranged from 0 (no errors detected) to 10 (all errors detected).

Metacognition. Coefficient alpha for the 52 items was 0.95. Scores ranged from 2.48 to 5.83 ($M = 4.63$, $SD = .54$, $N = 141$).

Correlational analyses. A total of 21 potential predictor variables was retained. Correlation matrices were constructed for each class type (see Appendix K).

Predictors of performance. In the 5-week class, only having performed a job atypical of an MOS was significantly correlated with academic performance. Oddly, this correlation was negative.   In the 7-week class there were three significant predictors of academic performance (highest level of civilian education, prior honor graduate status, MAI Inventory) and one marginally significant predictor (Attention to Detail, $p = .056$). These results argue for the use of separate regressions for each class type.

Military experience cluster. In both of the matrices, a cluster of correlations emerged which we called the 'military experience' cluster. In the 5-week correlation matrix, this cluster appeared to be composed of total time in service, number of prior military courses taken, rank,

having performed a job outside of a given MOS, viewing of online forums, having prepared briefs for management, and analyzing large amounts of information. In the 7-week course, this cluster contained time in service, rank, having prepared briefs for management, having planned/executed training events, having performed jobs outside of a given MOS, having been a mentor, and taking more classes through the Army Center of Education. While there is some overlap between these clusters, they were not synonymous, again arguing for the use of separate regressions.

Academic experience cluster. Both matrices also yielded a cluster of correlations dubbed 'academic experience'. However, the variables composing this cluster were not consistent across class types. In the 5-week class matrix, having been an honor graduate was correlated with being a mentor and raising a hand in class. In the 7-week class, having been an honor graduate was correlated with both academic performance (as noted above) as well as with the MAI scale. Raising a hand in class was correlated with viewing online forums, taking classes through the Army Center for Education, achieving expert marksmanship status on the last firing event, and the Previous Experience Scale.

Measures derived from instructor interviews. In the 5-week class, the MAI was related to the Previous Experience Scale and the Learning Goal Orientation measure. In the 7-week class, the Previous Experience scale was correlated with both the MAI and the Learning Goal Orientation scales.

Principal components analyses. To better understand the differences between correlational patterns, two separate principal components analyses (PCAs) were conducted. We realized that the sample size used in this research is smaller than recommended for principal components analysis (Kline, 1994). Our goal, however, was not to use the PCAs as estimates of sources of variance in the larger population but to assess similarity of factor structure by qualitatively examining the component loadings. We report only the first principal component of each matrix, as estimating loadings based on small samples is especially problematic with smaller components. All component loadings > .30 (see Appendix L) are bolded, as smaller loadings are hard to replicate and of dubious practical significance (Kline, 1994).

The comparison of the first principal components in each matrix reveals intriguing loading patterns. We focus upon those which are most distinct across the groups. In the 5-week group, academic performance loads with a -.54. In the 7-week group, academic performance exhibits a .36. Similar loading shifts are exhibited from the 5-week to 7-week group for the Previous Experience Scale (-.19 to .52) and for the MAI (-.20 to .51). Other notable loading shifts are seen for prior honor graduate status (.00 to .52) and the total number of prior military courses taken (-.26 to .67). This further supports the use of separate analyses for the two class types.

Stage 2

As both the correlation and PCA analyses indicated that the variable interrelationships varied with class type, we conducted regression analysis on the 7-week class alone. (Conducting

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regression analysis on the 5-week class would be redundant, as there was only one significant predictor of academic performance.)

Two regression equations were computed with the three significant predictors (highest level of civilian education, prior honor graduate status, MAI) and academic performance as the criterion. The first regression was simultaneous, to give an estimate of the upper limit of predictability. The second regression was stepwise, to indicate the predictability obtained when using unique predictors. (See Appendix M.)

The simultaneous regression containing all three of the predictor variables explained academic performance fairly well, $F (3, 76) = 6.33$, $p < .01$, $R = .45$. The t-test for the MAI beta weight was not significant, however, indicating that much of the MAI's predictive power overlapped with the other two predictors. The stepwise regression confirmed this, dropping the MAI variable and producing a multiple R comparable to that of the full model ($F (2, 77) = 8.51$, $p < .01$, $R = .43$).

Stage 3

The construction of competency categories was conducted on the 7-week class alone, as there was only one significant predictor of academic performance in the 5-week. Furthermore, the directionality of the predictor makes theoretical interpretation of the relationship suspect. The predictors used in the 7-week class were prior honor graduate status and highest level of civilian education.

Although 'extreme groups' approaches can be fruitful, this was judged inappropriate given the truncated range of academic scores. As the 'former honor graduate' variable was already dichotomous, the only variable to be recoded was highest level of civilian education. Here we were at a disadvantage compared to other research settings. Consider Kalyuga and Sweller (2004), who simply selected students from intermediate and advanced math classes to generate low and high prior knowledge categories. In the current research, however, a variety of other considerations came into play.

The civilian education variable ranged from 1 (some high school) to 6 (doctorate). It is desirable to have approximately equal numbers of people in each group. This was impossible given the nature of the distribution (some high school $n = 1$, high school $n = 31$, associates $n = 23$, bachelor's degree $n = 31$, master's $n = 2$). Any method of splitting would result in unequal sample sizes. Therefore, we chose to just recode the scale so that 1-3 (some high school through associates degree)= low and 4-6 (bachelor's through doctorate)=high.

The effects of these competency categories upon academic performance were assessed via a 2 x 2 ANOVA. The interaction was not significant, nor was there a significant main effect for the civilian education variable. However, the main effect for prior honor graduate status was significant ($F (1, 80) = 14.78$, $p < .01$). Prior honor graduates performed better academically ($M = 88.97$, $SD = .95$) than those who were not prior honor graduates ($M = 84.88$, $SD = 1.21$).

Discussion and Conclusion

The objective of this research project was to produce a valid and reliable means of measuring Soldier differences in knowledge, skills, and experiences (KSEs) relevant to academic performance. The existence of such a measure would enable further experimentation into optimum training methods for groups with different KSE profiles. There are several methods by which individual differences relevant to academic performance might be isolated, including mass administration of individual difference measures. However, such an approach would be costly in terms of time, effort, and money. It was hoped that interviewing experienced WOCS instructors would serve to identify performance-relevant individual differences.

This goal was partially met, with the MAI significantly predicting academic performance for the 7-week students and the Attention to Detail (errors in an Operation Order) almost doing so. However, the predictive power of the MAI overlapped with more easily administered demographic items related to prior academic performance (i.e., highest level of civilian education, prior honor graduate status).

Possible reasons for not obtaining stronger results include limitations of methodology, instruments used, and characteristics of the WOCS course. One potential method limitation involves the interview method. It is plausible that instructors rely more on implicit, nonverbal cues in class which they either fail to recall later and/or which they find difficult to adequately describe. Another possibility is that instructors recall the co-occurrence of individual differences rather than which differences are related to performance. Presumably there are multiple occasions to observe individual differences at play in both formal and informal events within and outside the classroom. Academic performance, however, was measured on three (comparatively infrequent) occasions. Some of the instructors stated that persons who did well on one competency also did better on others. On this point it is relevant to recall that there were significant correlations among the instructor-provided individual differences.

Reliability of the instruments was also a concern. The least reliable measure (Cronbach's alpha = .32) was the Situational Judgment Test. One obvious means of increasing the reliability of a measure is to add more items. (Note that Cronbach's alpha for the longest instrument, the 54-item MAI Inventory, was .95, and that the MAI was the sole instructor-provided individual difference measure which correlated with academic performance.) However, adding more items was judged infeasible in light of the number of other measures in the instrument packet and the time constraints of administration. Another approach would be to alter response instructions (e.g., "Rate the effectiveness of each response" vs. "Pick the best and worst responses"), which has been shown to greatly increase internal consistency of SJTs (Ployhart & Ehrhart, 2003). Unfortunately, this option was not viable for the current effort. Instructors were encouraged to rate each response as well as pick the best and worst options. However, inter-instructor agreement was high only when choosing the most effective responses.

A limitation associated with characteristics of the course has to do with prescreening of applicants. (We wish to stress that this is hardly a defect in the course itself, which aims to train select individuals to carry out specific duties. Rather, it is a limitation in the sense that it has certain implications for measurement.) During the final briefing with WOCC personnel, one

academic instructor opined that the WOCC has in recent years instituted a much more stringent selection process for WOCS applicants. Screening procedures can produce restriction of range in criteria variables, and hence reduce the predictive power of performance correlates.

Another WOCS characteristic of some concern is the two course types. From the current data, it is evident that the individual difference-criterion relationships vary across course type. This kind of interaction suggests the need to search for other variables which might have approximately the same relationship across course types.

Finally, it bears repeating that performance in the WOCS course is in actuality a composite of three domains: academic performance, physical fitness, and leadership ability. Both TAC officers and Academic instructors opined that leadership is more highly valued than academic performance. Unfortunately, there were no formal measures apart from peer assessments which tap leadership. This raises the possibility that the individual differences supplied by instructors may be relevant to WOCS performance, but more to the physical fitness and leadership aspects than the academic aspect.

For the most part, WOCS academic performance was unrelated to the individual difference variables identified by the instructors. While a few of the demographic items were significantly related to academic performance, these relationships were not strong enough to use as a basis for tailoring training. The ability of the individual difference variables to predict academic performance was greater in the 7-week class of less experienced Soldiers than in the 5-week course of more experienced Soldiers. In the case of the 7-week course, the one significant instructor-identified predictor (the MAI) did not uniquely predict academic performance above and beyond the more easily administered demographic items.

Recommendations

Future research into tailored training for the Army should consider carefully how performance within a course is measured. Focusing on courses in which performance is more narrowly defined would aid in isolating salient individual differences. Also helpful would be access to information regarding performance in prerequisite courses. For example, Kalyuga and Sweller (2004) defined prior knowledge of mathematics as progression in a series of courses (i.e., students in advanced math classes possessing more prior knowledge than students in intermediate math classes). In addition, information regarding pre-testing may be of interest. For example, in the WOCS course a distributed learning test allows Sergeants and above to enter the 5-week course. Inclusion of the distributed learning test might be a useful predictor of performance for Phase II (5 week) participants, although many of these tests are rather rudimentary pass/fail measures.

Future research should also continue to search for demographic variables which are easily administered but aid in performance prediction. Demographic variables can aid in prediction through their association with other variables. For example, two of the performance correlates (amount of civilian education and honor graduate status) are arguably proxy variables for mental ability. Research indicates that the highest level of education achieved is a fallible but valid

indicator of mental ability, with correlations ranging from .60 to .70 (see Matarazzo, 1972, as cited in Jensen, 1998). While measuring general mental ability requires using rather lengthy instruments, the findings here suggest that a combination of proxy variables might supply a reasonable estimate of general mental ability without undue effort.

Finally, efforts in tailored training may wish to focus more upon prior knowledge rather than interviewing instructors. A brief summary of the evidence for this position might be framed as follows. In many domains, the measurement of aptitudes above and beyond general mental ability yields little additional predictive power (Thorndike, 1985; Jensen, 1998). Further, there is a good deal of evidence that general mental ability impacts performance largely through prior knowledge (Schmidt & Hunter, 1992; Borman, White, Pulakos, & Oppler, 1991). As described in the introduction section, prior knowledge is known to interact with learning condition. In other words, general mental ability has demonstrated repeatedly its ability to predict performance. This ability impacts performance primarily through prior knowledge, which is in some ways easier to measure than general mental ability. In addition, prior knowledge sometimes predicts performance better than general mental ability. Further, as cited in the introduction, prior knowledge has been shown to interact with learning conditions. Focusing upon this variable thus promises to be a fruitful approach to tailored training research.

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Appendix A

Interview Protocol

I.   Purpose

The purpose of this interview is to identify dimensions of knowledge, skill, or ability that can account for Soldier differences as a result of education, training, or experience. There are two goals:

    a. To identify 4-6 dimensions or competencies on which Soldiers tend to differ as a result of deployments or other prior experiences.

    b. To use these competencies to develop measures of Soldiers' variations in knowledge, skills, or abilities.

II.   Background

Provide a brief overview of the purpose of this project and the expectations we have for the role of the interview participant:

The purpose of this project is to more appropriately target training to Soldiers based on their existing knowledge and skill sets. The Army has a pressing need to make every hour of training as effective and efficient as possible. As a result of jobs during deployments and other training and educational experiences, individual Soldiers can vary greatly from each other in terms of the knowledge and skills they possess, even sometimes within the same MOS. The impetus for this effort is the Army's recognition that knowledge and skill differences do exist within course/training populations, and that these differences are in fact opportunities that can be leveraged to improve training by making it more efficient.

The need, therefore, is to produce a valid and reliable means of measuring Soldier differences. We would like to interview you to begin to identify the types of knowledge, skills, and abilities on which your Soldier/students differ.

- *We expect to talk with you for about 1 hour up to 1 ½ hours. Is that all right with you?*

- *Do you have any questions about our project or about this interview?*

- *We would like to record this interview so that we do not misrepresent what you tell us. We will only use the recording within our project team, and your comments will remain anonymous. Is that all right with you?*

III.   Background questions

    a. What is your MOS, and how long have you served in the Army (or other armed forces)? If you have not served in the military, and are and Academic instructor, please tell us about your background and experience as an instructor.

    b. What is your deployment experience? How long were you in the combat zone? What was your job(s)?

c. Have you held instructor jobs in other schools?

d. How long have you been an instructor for this particular course?

IV. **General Questions**

a. Can you describe in your own words the differences between Phase I and Phase II on the following modules:

    i. Communication skills?

    ii. Leadership and Ethics?

    iii. Field Leadership?

b. Between the 7-week (Phase I) and 5-week classes (Phase 2), are there perceived differences in the candidates' abilities regarding attention to detail and thoroughness at the beginning of the courses? Did the 7-week candidates' abilities match the 5-week candidates' at the end of the course?

c. Are the TLOs and ELOs for each course section along with evaluation forms found within the lesson plans?

    i. After determining which we are most interested in, may we have access to this information?

d. What is the range of experience for students? For instructors?

    i. Deployment experiences? (We realize there may be a large difference between Phase 1 and Phase 2 candidates)

    ii. Training or educational experiences?

e. How familiar do you become with each of the students in your course?

    i. Do you feel this familiarity differs among Academic Instructors and TACs?

    ii. Whom do you feel may be better able to judge in advance who will be successful in the course?

    iii. At what point in the course are you able to discern who will and will not succeed in your course?

        1. Describe how you arrive at that decision. What is it that you are looking for when predicting if a candidate will be successful?

f. What percentage of students in your course do you feel already know the course material due to their deployment or other experience?

    i. Is there a certain type of deployment experience (region, mission, etc.) that you believe to be related to course success?

     ii. How do you leverage those more experienced Soldiers in your course?

        1. How did you make this decision (on what characteristics, behaviors, traits, etc.)?

        2. Do you use these personnel in leadership positions earlier in the course?

g. Where do you find the biggest differences between students?
     i. In what sections of the course?
     ii. What separates the high from the low performers in these sections?
     iii. Do you find excelling in a certain course section lends itself to overall success in the course?
        1. Which section would this be?

h. Think about a student who was a standout in the course and finished high in the top tier of WOCS. Now think about a student who had a very hard time passing this course, or someone who performed poorly throughout the course. Describe the differences between the standout and the poor performer.

     i. We are not looking for personality, but something more concrete for example: Thinking skills, decision making – things which could be improved by training.
     ii. Can you think of students who performed especially well in certain course modules compared to other students?
        1. In which modules were there marked differences between students?
        2. What were the differences between the high and low performers?
     iii. Do soldiers in the 7-week versus the 5 week course have any advantage, perceived or real, due to their more recent acquisition of the knowledge of the first 2 weeks of the 7-week course?

i. Are there parts of the course everyone finds very simple? What are they?

j. Are there parts of the course everyone finds challenging? What are they?

k. How do you grade students in the course, specifically (get a walk through on evaluation forms)?

     i. Is this standard across all instructors or does each instructor have their own twist on how to grade or what to look for when grading?

        ii. Are there different methods used to evaluate course effectiveness/student performance?

    l. Is there a class rank at the end of the course to display performance of students from best to worst?

        i. Are we able to have access to this information in order to validate our future measures?

        ii. How do you arrive at these rankings?

V. Writing Requirements (Autobiography, Operations Orders, Essays, & Military Memorandums)

a. This course is quite heavy in terms of writing assignments. Students are required to write: an Autobiography, Operations Plans, Essays, and Military Memorandums. How do these assignments help Soldiers succeed in other content areas?

b. Within the Memorandums section, it states that Soldiers may be required to explain their deficiencies and write corrective actions. How often does this occur and what particular actions do these usually focus on?
        i. Do you find that those Soldiers who practice explaining their deficiencies and arriving at corrective actions are able to better reflect on their actions?
        ii. Do you find those that practice this tend to do better than others in the course as a whole?

c. How is writing skill evaluated? (By instructors, self-evaluation)

d. In what other course sections/modules is a Soldier's writing style or the ability to interpret and deliver on written orders essential?

e. What are the features of a "good" written document (ask for each of the documents)?
        i. What are the characteristics of students who can produce those features?
        ii. What are the characteristics of students who cannot?

VI. Leadership Development

The POI often asks you to become familiar with Appendix A of FM 6-22 (Leadership Competencies) in order to assess performance evaluation. The competencies listed in FM 6-22 are much more detailed and actually different that the competencies which appear on the evaluation forms.

a. Are these competencies formally evaluated (Leading, Developing, Achieving from FM 6-22) or do you and students only refer to actions of Influencing, Operating, and Improving? The reason I ask is that they are outlined in section 4.4 of the WOCS SOP.

    i. Do you find that being skilled in any of the particular areas of Influence (communicating, decision making, motivating), Operating (planning, executing, assessing) or Improving (developing, building, learning) aids in being successful within this course?

    ii. Are there certain actions/competencies within this list you find are essential for course success? Or, are any of these competencies shared among your top graduates?

b. Ask for the following dimensions (all 3 subsections within Influencing, Operating, and Improving):

    i. For X dimension, what does it take to get a rating of "yes"? What does it take to get a rating of "no"? What do you think about when evaluating each student on each of these dimensions?

    ii. Think about the students who receive "no" on each of the dimensions (ask for each dimension). What are the differences between those students and the ones who receive a "yes"?

c. Leadership development within the WOCS is stated to not offer training that is specific to any MOS.

    i. Do you find that better leaders, or higher level graduates, tend to come from a specific MOS or have some similar prior training experiences?

        1. If so, to what specifically would you attribute the difference?

d. It is stated that the LDP (leadership development program) identifies candidates with less effective skills and seeks to help them develop those skills. How does this occur specifically? That is, what criteria are used to determine where on a continuum someone's leadership skills fall?

VII. Other general questions:

a. How do TAC Officers track the progress of each candidate (do they keep notes, is there a form they refer to, or is this simply done through evaluations following each course section)?

b. Are peer evaluation forms (D-4) used for grading?

i. What is the typical course performance for those students whose peer evaluation closely resembles the TAC Officer's ratings?

ii. How do the peer ratings compare with instructor ratings?

1. What do you believe peers see in each others' performance that instructors might not?

c. How valuable are self-evaluations in terms of predicting course performance?

i. Do you find prior experience (or some other factor) aids an individuals' ability to critique their own performance?

ii. Do you believe some have a better ability to introspect/reflect on themselves that leads to more accurate self-evaluations?

iii. Do these individuals that are skilled at looking inward and examining their thoughts and feelings seem to stand out in any other areas of the course? From your observations, how well do individuals with this type of skill perform in the course as a whole?

d. May I be granted access to the Student Evaluation Plan (SEP) in order to get detailed information on evaluation forms in addition to graduation requirements?

i. We are not interested in attributing our findings to individual students, (feel free to remove any personal information) but we'd like to see a range of the forms to get a sense of the differences across the population if you don't mind.

Appendix B

Informed Consent

Informed Consent – KEEP THE 1ST PAGE FOR YOUR RECORDS

Title: Assessing the Diversity of Soldier Populations to Enable Tailored Training

       Purpose of the research study: The purpose of this study is to measure the range of knowledge, skills, and experiences (KSEs) among Army students and determine how this information can be used in tailoring training. As a first step toward this goal, we are gathering information regarding KSEs from Army students.

       What you will be asked to do in this study: You will fill out various paper-and-pencil forms attempting to measure your knowledge, skills, and experiences. The session should take approximately two hours. No individual responses will be reported.

       Location: This study will be at Fort Rucker, Alabama. All materials will be provided.

    Voluntary participation: Your participation is voluntary; there is no penalty for not participating. You have the right to withdraw from the study at any time without bias. You must be 18 years of age or older.

       Time required: Up to 2 hours at the research site

       Risks: There are no risks greater than those encountered in everyday activities.

       Benefits: Your responses will benefit tailored training efforts in Army courses-most specifically here at the Ft. Rucker WOCS course. Note that when filling out these forms you do not have to answer every question. You will not lose any benefits if you skip questions.

       Compensation: No compensation is provided for your participation.

       Whom to contact if you have questions about the study: For further information about this project or your rights as a participant, send e-mail to: ARI_RES@conus.army.mil (type "IFRU August 2009" in the subject line).

       Whom to contact about your rights in the study: For further information about this project or your rights as a participant, send e-mail to: ARI_RES@conus.army.mil (type "IFRU August 2009" in the subject line).

TITLE: ASSESSING THE DIVERSITY OF SOLDIER POPULATIONS TO ENABLE
TAILORED TRAINING.

If **you agree to participate in this study, please sign and date below.**
<u>**Agreement:**</u> I have read the procedures described above.

_____ I am at least 18 years of age (check)

_____ I voluntarily agree to participate in the study (check)

Signature: _____

Date: _____

Appendix C

Demographic Questionnaire

1. **Roster #**   _____

2. **Current rank:** _____

3. **MOS/AFSC/Rating (i.e., 11B Infantryman, 25C Radio Operator Maintainer) prior to WOCS:**

    _____

4. **Total time in service (years and months):** yrs_____ months_____

    a. Active: yrs_____   months_____

    b. Reserve: yrs_____   months_____

    c. National Guard: yrs_____months_____

5. **Please list any military education you have completed prior to WOCS (such as Warrior Leader Course):** _____

    _____

6. **Civilian education (highest level completed): Circle one**

    Some high school   High school   Associates Degree   Bachelor's Degree

    Master's Degree   Doctorate Degree

7. **Have you ever held a job atypical of your MOS?** __ Yes __ No

    a. If yes, please describe it: _____

    _____

8. **Most recent duty position/assignment prior to WOCS:**

    a. _____

    b. Length of time in this position/assignment: yrs___   months_____

9. **Leadership experience you have had prior to WOCS: (Plt Sgt, Sqd Ldr, etc.)**

    _____

    ____

10. **Duty position/assignment**: _____

11. **Any combat or deployment experience you may have:** _____ Yes _____No

    a. **(Circle deployed locations) Iraq   Afghanistan   Kuwait**

b. Total number of months deployed

_____ _____

12. **Duty position/assignment for most recent combat deployment:**

_____

Appendix D

Previous Duties, Responsibilities, and Experiences Questionnaire

This questionnaire will ask you about your prior life experiences. You can answer based upon experiences in both your military and civilian life. Please read the following questions and circle YES or NO as it pertains to you as well as fill in blanks where appropriate.

1. Have you made a formal presentation to a group of people?
    YES   NO
    If Yes:
            a. How many times have you done this? (*mark one with an* **X**)
                __ less than 5 __ 5 – 10   __ 10-20   __ 20 or more
            b. Were the presentations to an audience familiar with the subject?
                    YES   NO
            c. Were you involved in writing or developing the material?
                    YES   NO

2. Have you been responsible for the actions of a group of people?
    YES   NO
    If Yes:
            a. Was this a role assigned to you?
                    YES   NO
            b. How many individuals were you responsible for? (*mark one with an* **X**)
                __ less than 5 __ 5 – 10   __ 10-20   __ 20 or more
            c. How long were you in this position? Years ____ months _____

3. Have you prepared briefings for presentation to management?
    YES   NO

    If Yes:
            a. Were you involved in collecting the content material?
                    YES   NO
            b. Did you develop some or all of the material?
                    YES   NO
            c. Did you personally analyze the information?
                    YES   NO

      d. Did you offer any recommendations or solutions?

            YES   NO

4. Have you planned and/or executed training events?

    YES   NO

    If Yes:

        a. How many times have you done this for field or other practical application exercises? (*mark one with an* **X**)

            __ less than 5 __ 5 – 10   __ 10-20   __ 20 or more

        b. How many times have you done this for classroom instruction? (*mark one with an* **X**)

            __ less than 5 __ 5 – 10   __ 10-20   __ 20 or more

        c. Did you lead the training yourself (were you an instructor)?

            YES   NO

        d. Was the training evaluated?   YES

            NO

5. Are you fluent in more than one foreign language?

    YES   NO

    If Yes, did you learn the other language(s):

        a. On your own?

        YES   NO

        b. Because your family spoke more than one language?

        YES   NO

        c. To fulfill a class requirement?

        YES   NO

6. Have you had to perform assignments that fell outside of your MOS or job description?

    YES   NO

    If Yes:

        a. Is this something that was asked of you?

            YES   NO

        b. Did this require you to learn something new?

            YES   NO

           If Yes:

      i. Did you feel comfortable working outside of your specialty area?

           YES   NO

7. Have you been a mentor?

     YES   NO

    If Yes:

       a. Did you benefit from this relationship?

            YES   NO

         If yes, how? (fill in below)

         _____

         _____

         _____

       b. Did you initiate the relationship?

            YES   NO

8. Have you had to analyze large amounts of data or information?

     YES   NO

    If Yes:

       a. Did you find that you were skilled at doing this?

            YES   NO

       b. Did this require you to pay close attention to details?

            YES   NO

       c. Was this on a topic you were familiar with?

            YES   NO

       d. Is this something you did, or were asked to do on a frequent basis?

            YES   NO

         If Yes:

            i. How often did you do this? (*mark one with an* **X**)

               __ everyday   __ several times a week   __ once a week __ once a month

9. Has your prior job performance been formally evaluated?
        YES   NO

    If Yes:
            a. Did you change or alter the way you approach work
                based upon the feedback you received?
                        YES   NO

            b. Do you compare your performance level with those
                around you?
                        YES   NO

10. Besides debriefings or AARs, do you ever review your own performance
    and think about how you could improve your performance next time?
        YES   NO

    If Yes:

            a. Are you skilled at critiquing your own performance?
                        YES   NO

            b. Does your performance seem to improve after thinking through
                new strategies?
                        YES   NO

11. Do you like to receive feedback on your performance?
        YES   NO

    If Yes:
            a. Is this something you actively seek out?
                        YES   NO

12. Have you held a leadership position?
    YES   NO

    If Yes:
            a. Have you ever taken charge of a group in the absence of
                the leader?
                YES   NO

b. Has a group ever designated you as its leader, either through formal or informal election?

YES   NO

13. Do you find yourself thinking of new ways to improve products or processes?

YES   NO

        a. Do you suggest these changes?

           YES   NO

14. Do you regularly raise your hand in class?

    YES   NO

If Yes:

        a. Do you primarily: (*mark one with an* **X**)

        __ raise comments/thoughts __ ask questions __ seek clarification

15. Do you regularly view an online professional forum, such as Army Knowledge Online or themotorpool.com?

    YES   NO

If Yes:

        a. How often do you view the site? (*mark one with an* **X**)

        __ everyday   __ several times a week   __ once a week __ once a month

        b. Do you contribute your own thoughts or ideas to the forum?

           YES   NO

16. Do you voluntarily participate in continuing education programs through the Army Education Center?

    YES   NO

If Yes:

        a. How often do you do this? (*mark one with an* **X**)

        __1 course per year __2-3 courses per year __4 or more courses per year

17. Do you regularly write in a personal journal?

    YES   NO

If Yes:

      a. What is your primary reason for doing this? (*mark one with an* **X**)

         __ Something you have done since you were young

         __ To improve writing skills

         __ Keep track of performance improvements

         __ Reflect about yourself and your situation

18. During your last marksmanship qualification, did you qualify as an expert?

    YES   NO

19. Have you ever been an honor graduate in a military or civilian course?

    YES   NO

Appendix E

Previous Experience Scale

Please answer the following questions by circling the best answer. The scale reflects how often a behavior or event has occurred in <u>your experience</u>-whether in your military or civilian life.

0= Does not apply
1= Not at all (0% of the time)
2= Rarely (1-20% of the time)
3= On a few occasions (21-40% of the time)
4= Sometimes (41-60% of the time)
5= Somewhat often (61-80% of the time)
6= Very often (81-100% of the time)

	0 Does not apply	1 Not at all	2 Rarely	3 On a few occasions	4 Sometimes	5 Somewhat often	6 Very often
1. How often were you among the first in a group to recognize changes in a situation?	0	1	2	3	4	5	6
2. How often were you one of the first to anticipate how a particular change in a situation/operating environment would affect your goal/unit's mission?	0	1	2	3	4	5	6
3. How often have you found out about a change in a situation/operating environment when it was almost too late (or even too late) to do something about it?	0	1	2	3	4	5	6
4. How often were you praised for effectively organizing others during a crisis or during an unexpected change in a prior course of action?	0	1	2	3	4	5	6

	0 Does not apply	1 Not at all	2 Rarely	3 On a few occasions	4 Sometimes	5 Somewhat often	6 Very often
5. How often have others praised your ability to recognize small details, saying for example "you don't miss a thing" or "nothing gets past you"?	0	1	2	3	4	5	6
6. How often have others praised your ability to pull information together quickly?	0	1	2	3	4	5	6
7. How often did you recognize a potentially dangerous or critical situation was about to occur before others realized the problem?	0	1	2	3	4	5	6
8. How often have your superiors, friends, and peers praised you for your ability to clearly communicate your "intent" to your subordinates?	0	1	2	3	4	5	6
9. How often have you been asked by your commanding officer, or another leader, to put something into action that they had planned?	0	1	2	3	4	5	6
10. How often have you done well in games where you have to figure out what your opponent will do and plan accordingly (e.g., Chess)?	0	1	2	3	4	5	6
11. How often have you gotten a group of people to go along with an idea of yours when initially none of them wanted to?	0	1	2	3	4	5	6

	0 Does not apply	1 Not at all	2 Rarely	3 On a few occasions	4 Sometimes	5 Somewhat often	6 Very often
12. How often did others praise your ability to adapt to change, saying for example such things as you "rose to the occasion" or "stepped up to the plate"?	0	1	2	3	4	5	6
13. How often were you told (e.g., in an AAR) about a situational detail that you should have caught earlier?	0	1	2	3	4	5	6
14. How often has a subordinate misunderstood his new assignment or role after you issued instructions?	0	1	2	3	4	5	6
15. How often have you been among the first in your group (or unit) to recognize that something has changed in a situation?	0	1	2	3	4	5	6

Appendix F

Learning Goal Orientation

How strongly do you agree or disagree with the following statements?	Strongly Disagree					Strongly Agree
1. I am willing to select a challenging assignment from which I can learn a lot.	1	2	3	4	5	6
2. I often look for opportunities to develop new skills and knowledge.	1	2	3	4	5	6
3. I enjoy challenging and difficult tasks in which I'll learn new skills.	1	2	3	4	5	6
4. For me, development of my ability is important enough to take risks.	1	2	3	4	5	6
5. I prefer to work in situations that require a high level of ability and talent.	1	2	3	4	5	6
6. I'm concerned with showing that I can perform better than others.	1	2	3	4	5	6
7. I try to figure out what it takes to prove my ability to others.	1	2	3	4	5	6
8. I enjoy it when others are aware of how well I am doing.	1	2	3	4	5	6
9. I prefer to work on projects where I can prove my ability to others.	1	2	3	4	5	6
10. I would avoid taking on a new risk if there was a chance I would appear incompetent to others.	1	2	3	4	5	6
11. Avoiding a sow of low ability is more important to me than learning a new skill.	1	2	3	4	5	6
12. I'm concerned about taking on a task if my performance would reveal that I have low ability.	1	2	3	4	5	6
13. I prefer to avoid situations where I might perform poorly.	1	2	3	4	5	6

Appendix G

Situational Judgment Test

The following items ask you to read a situation and answer by circling one of the four response choices. Simply answer based on how you feel you would act given these situations.

1. **Please read the following background information carefully. Then you will be given a specific situation and asked to choose the best course of action (COA).**

   Background information

   During your time in the WOCS course, your leadership will be evaluated from three perspectives as stated in the WOCS SOP: (1) self-assessment, (2) peer evaluation, and (3) cadre evaluation through a developmental counseling form. All three will be reviewed with you during the course to help you progress as a more competent leader.

   At this point, you should now have a firm understanding of the background. Next, you will be asked to imagine yourself in the following situation:

   While reviewing leadership evaluations your peers have written of you with a TAC officer, you are made aware that several individuals believe that your communication skills are a significant weakness. Specifically, comments mentioned that you speak too softly, have some problems listening, and are not always able clearly get your point across. Your TAC officer agrees with the comments that were expressed by your peers; however, this is something you did not mention in your own self evaluation as you believed you communicated quite well with others and despite hearing this feedback, you still feel confident that you have strong communication skills.

   Given what you know of this situation, what actions would you take?

   A.) You realize that everyone has their own weaknesses, but that effective leadership comes in many forms. You know that many are able to "speak softly, but carry a big stick", and carry on with the leadership style you are comfortable with and confident in.

   B.) You know that when you get more experience and practice your skills in communicating and listening will improve over time. After all, this is one of many military courses you plan on being enrolled in. Nobody is perfect the first time around, but you will have ample opportunity to improve down the line.

   C.) It is hard for anyone to admit their own shortcomings, but you swallow your pride and accept the criticism. You tell yourself and others that you are committed to make improvements.

D.) You seek out your peer evaluators as well as your TAC officer and ask them for additional clarification or examples on your communication skills that were lacking. You ask them to point out these weaknesses if you repeat them in the future and learn from others who are better skilled in these areas.

2. **Please read the following background information carefully. Then you will be given a specific situation and asked to choose the best course of action (COA).**

Background information

One of your fellow candidates is an E7 who has been in the Army for 14 years. He has served as a platoon sergeant, and has demonstrated his proficiency as a Soldier. You observe that he is a hard worker with leadership potential. During informal conversations, you learn that he has some college experience but has been out of educational realm for some time. It becomes clear that his study habits are subpar. He is struggling with learning the section on Army staffs, and he believes these grades may put him at risk from successfully graduating in the program. Given his experience and pride, he has a difficult time admitting his shortcomings.

At this point, you should now have a firm understanding of the background. Next, you will be asked to imagine yourself in the following situation:

The WOCS course has been underway for two weeks. You, a WOCS candidate, do not know this individual very well beyond his background, but become aware of his struggles during lunch at the dining facility. While at lunch, he brings up his concerns about passing, expressing his discouragement and actually mentions thoughts of leaving the course. You believe this is a mistake given that he is so highly qualified in his field.

Given what you know of this situation, what actions would you take?

A.) You advise the individual to meet with a TAC officer to discuss his concerns. The TAC officer is the most knowledgeable person on this matter and has a lot of experience in helping individuals get through the course successfully.

B.) You realize that Army staffs is an area that other students also find difficult, and make an announcement at the end of your next class that you would like to organize a study group that would meet each evening at 1900 to review the Army staff course materials. You invite everyone to participate.

C.) You try to put him at ease that there is nothing to worry about by reminding him that there is an end of class review, and that everyone passes the course if they put in the effort.

D.) You assess that everyone is in the same situation, and this is a hurdle each candidate must pass in order to succeed in the course. It is the responsibility of each candidate to learn the material and the responsibility of the instructor to teach the materials in a manner that ensures one would not fail the course.

3. **Please read the following background information carefully. Then you will be given a specific situation and asked to choose the best course of action (COA).**

   Background information

   Physical training is a part of the WOCS course. As stated in the SOP, your class will conduct a physical fitness program that matches the needs of your class and helps you build competence and confidence. The exercise activities you'll participate in will focus on improving both your cardio-respiratory (CR) fitness and your muscular strength/endurance. The activities include, but are not limited to: running, pushups, abdominal exercises, circuit training, and grass drills. Your APFT score is a major determinant in your overall academic average, and this score must be excellent if you wish to be on the Commandant's list.

    At this point, you should now have a firm understanding of the background. Next, you will be asked to imagine yourself in the following situation:

   You are a WOCS candidate who has always excelled in the classroom, but has never been the most physically fit. It is one week into the WOCS course, and you are currently having problems finishing the 2 mile run, barely meeting the minimum standard, although you have passing scores on the other events. Your true goal is to eventually become an information technology specialist working in a tactical operations center. The high grades of the first few academic tests you received confirm the confidence you had about your classroom abilities. After running some calculations, you realize that even without getting near a perfect score on the two mile run, your projected academic grades will allow you to easily pass the WOCS course.

   Given what you know of this situation, what actions would you take?

   A.) You ask your TAC officer if you can join an ability group run that is a pace faster than your last recorded time. In the meantime, you take it upon yourself to perform interval training runs in your off time since you know these can help you improve your endurance and running speed.

   B.) It is still too early in the course to know what shape you will be in when the final test is given. You still want to perform well, but decide to wait and see how close you are to the time limit after one more week. If you are not within 30 seconds of the time, you will make a concentrated effort to push yourself to get there.

   C.) You concentrate on your strengths and continue to keep your focus on the academic tests. In the grand scheme of things, your PT score is not as important as one's

technical proficiency on the battlefield.

D.) As a firm believer in the mentality that "practice makes perfect", you continue to work hard with your unit in PT and trust that the physical fitness program laid out for you will allow you to run under the maximum time.

Appendix H

Attention to Detail

Instructions

1. Within the WOCS course, you will be required to be familiar with Operations Orders.
2. Assume that you are the last person to review this Operations Order before it is officially sent out. Your job is to review the order to make sure it is complete and free of errors.
    a. Errors may range anywhere from incorrect spelling and punctuation all the way to not appropriately conforming to military doctrine. It is your job to identify and correct each word, phrase, or segment you feel is in error.
    b. <u>You are not responsible for items that may be missing; only those that are incorrect in the following OPORD.</u>
3. Please circle and number all errors you find. Do not circle the entire clause or sentence which contains the error but specifically circle the relevant word or section.
4. Correct each error. On the last page of this test is a blank sheet. For each error you have identified:
    a. Provide the number you wrote that corresponded to that error
    b. Provide an explanation of why the section your circled was incorrect
    c. To the best of your abilities, write how you believe the word, phrase, or section should have been properly documented.

    Sample error and response:

    (Criticle) to this operation will be security forces gaining the trust of the local populace to acquire intelligence information that will assist with future operations within the AO.

    1. Word is misspelled. Should be critical.

OPERATION DESTINY EAGLE 0609
References: none
Time zone used: Local

TASK ORGANIZATION
- A CO, 25th BSB
- 1ST WOC TAC Officers (4-6)
  Succession of Command:
  a. (Cadre): CO CDR; XO; SR TAC; Primary TAC.
  b. (WOC): Primary TAC; CCL; 1st CPL; 2nd CPL.

1. **SITUATION**

   a. **Enemy forces.** Platoon size insurgent force has been reported conducting operations IVO Sector 32 (16RFV2413671617) in AO Rucker. They are assessed at 85-90% strength and epuiped with small arms, grenades, RPGs, mines, and/or IEDs.

   b. **Friendly forces.** A CO, 25th BSB will deploy to Forward Operating Base Freedom (FOB) IVO 16RFV2413671617 NLT 260540LJUN09 IOT conduct Pre Mobilization Training. Intent is to move tactically and safely from the garrison location to the FOB without personnel injury or loss of sensitive items.

      (1). Adjacent. None
      (2). Supporting. Each Class will have 4-6 TAC Officers attached from 1st WOC.

   c. **Environment.**
      (1). Terrain. None
      (2). Weather. None
      (3). Civil Considerations. None

   d. **Attachments and detachments.** None

   e. **Assumptions.** None

2. **MISSION.**

   A CO, 25th BSB will deploy to FOB Freedom IVO 16RFV2410971616 NLT 290540LJUN09 IOT conduct Pre Mobilization training and certification requirements for future combat operations.

3. **EXECUTION.**

   Intent: Move to/and occupy FOB Freedom No Later Than (NLT) 0620 HRS, to conduct Pre Mobilization training and certification and prepare for future combat operations.

End state: All Soldiers are trained and certified on WT/BDs; prepared to conduct combat operations while sustaining no injuries; maintain 100 percent accountability of all personnel and sensitive items.

a. **Tasks to manuever units.**
b. **Tasks to other combat and combat support units.**
c. **Coordinating instructions**
d. **Concept of operations (3 Phases):** This will be a three phase operation.
   Phase I - Pre-deployment Preparation and PCC/PCI IAW the N-HOUR Sequence.
   Phase III - Conduct Pre Mobilization training.

4. **COMMAND AND SIGNAL:**
   Signal:
   1. CO TOC: Call Sign:_____; Channel: _____
   2. TAC Team: Call Sign:_____; Channel:_____
   3. 1st PLT: Call Sign:_____; Channel:_____
   4. 2nd PLT: Call Sign:_____; Channel:_____
   5. MEDEVAC (Real World): 40.95
   6. Range Control: Motorola portable radio channel 4.
   7. RED STAR CLUSTER/RED SMOKE (REAL WORLD EMG).
   8. CHALLENGE/PASSWORD: TD# / COMBINATION
   9. RUNNING PASSWORD: GREETING OF THE DAY.
   10. TIME HACK: "On my mark, time is now _____."
   11. MIRC: TF_WOCC_BTLCPT (notional)

5. **SERVICE SUPPORT:**
   (1). Rules of engagement. Nothing in the rules of engagement prevents you from using deadly force to defend yourself.
   1. Enemy military and paramilitary forces may be attacked subject to the following instructions:
      a. Positive Identification (PID) is required prior to engagement. PID is "reasonable certainty" that your target is a legitimate military target. If no PID, contact your next higher commander for decision.
      b. Do not engage anyone who has surrendered or cannot fight due to sickness or wounds.
      c. Do not target or strike any of the following except in self-defense to protect yourself, your unit, friendly forces, or designated persons or property under your control: Civilians, Hospitals, mosques, churches, shrines, schools, museums, national monuments, and any other historical and cultural sites.
      d. Do not fire into civilian populated areas or buildings unless the hostile force is using them for hostile purposes or if necessary for your self-defense.
      e. Minimize collateral damage.

2. You may use force, including deadly force, to defend yourself from persons who commit or are about to commit hostile acts against you. You may use the same level of force to protect the following:
   a. Your unit and other Coalition Forces (including local police and security forces).
   b. Enemy prisoners of war and detainees
   c. Civilians from crimes that are likely to cause death or serious bodily harm, such as murder or rape
   d. Designated organizations and/or property, such as personnel of the Red Cross/Red Crescent, UN, and US/UN supported organizations.

Warning before firing You may, time permitting, give a warning in a loud clear voice:

<div align="center">

"KIFF – ARMICK" (Stop or I'll shoot)
"ERMY SE-LA-HAK" (Drop your weapon)

</div>

3. You may detain civilians if they interfere with mission accomplishment, possess important information, or if required for self-defense.
   a. Treat all persons and their property with respect and dignity.
   b. Local security forces and police are authorized to carry weapons.

4. Necessary force, including deadly force, is authorized for the protection of some types of property including the following:
   a. Public utilities
   b. Hospitals and public health facilities
   c. Electric and Oil infrastructure
   d. Coalition and captured enemy weapons and ammunition
   e. Financial institutions
   f. Other mission essential property designated by your commander

<div align="center">

<u>REMEMBER</u>
Attack only hostile forces and military targets.
Avoid fratricide—be aware of nearby units and local police and security forces
Spare civilians and civilian property, if possible.
Do not loot or steal.
Conduct yourself with dignity and honor.
Comply with the Law of War. If you see a violation, report it.

YOU ALWAYS HAVE THE RIGHT TO USE NECESSARY FORCE, INCLUDING DEADLY FORCE, TO PROTECT YOURSELF AND OTHERS

</div>

NOTE: THESE RULES OF ENGAGEMENTS ARE TO BE ADHERED TO THROUGHOUT THE FLX WITH THE FOLLOWING EXCEPTIONS:

- **USE OF DEADLY FORCE WILL NEVER BE USED**
- **PHYSICAL CONTACT WILL NOT BE MADE EXCEPT WHEN AUTHORIZED BY A TAC OFFICER DURING A TRAINING EVENT**
- **DO NOT POINT A WEAPON DIRECTLY AT AN INTENDED TARGET AND DISCHARGE IT WITHIN 5 FEET OF THE TARGET (POINT THE WEAPON AWAY AND SOUND OFF WITH "CLOSE KILL")**

6. **Additional Information:** None**.**

Metacognitive Awareness Inventory

The following are statements regarding how you approach your school-work and learning. Please read the following statements and indicate on the scale from 1-6 the extent to which the following statements represent how true the statement is about you.

		Strongly Disagree					Strongly Agree
1.	I ask myself periodically if I am meeting my goals.	1	2	3	4	5	6
2.	I consider several alternatives to a problem before I answer.	1	2	3	4	5	6
3.	I try to use strategies that have worked in the past.	1	2	3	4	5	6
4.	I pace myself while learning in order to have enough time.	1	2	3	4	5	6
5.	I understand my intellectual strengths and weaknesses.	1	2	3	4	5	6
6.	I think about what I really need to do before I begin a task.	1	2	3	4	5	6
7.	I know how well I did once I finish a test.	1	2	3	4	5	6
8.	I set specific goals before I begin a task.	1	2	3	4	5	6
9.	I slow down when I encounter important information.	1	2	3	4	5	6
10.	I know what kind of information is most important to learn.	1	2	3	4	5	6
11.	I ask myself if I have considered all options when solving a problem.	1	2	3	4	5	6
12.	I am good at organizing information.	1	2	3	4	5	6
13.	I consciously focus my attention on important information.	1	2	3	4	5	6
14.	I have a specific purpose for each strategy I use.	1	2	3	4	5	6
15.	I learn best when I know something about the topic.	1	2	3	4	5	6
16.	I know what the teacher expects me to learn.	1	2	3	4	5	6
17.	I am good at remembering information.	1	2	3	4	5	6
18.	I use different learning strategies depending on the situation.	1	2	3	4	5	6
19.	I ask myself if there was an easier way to do things after I finish a task.	1	2	3	4	5	6
20.	I have control over how well I learn.	1	2	3	4	5	6

		Strongly Disagree					Strongly Agree
21.	I periodically review to help me understand important relationships.	1	2	3	4	5	6
22.	I ask myself questions about the material before I begin.	1	2	3	4	5	6
23.	I think of several ways to solve a problem and choose the best one.	1	2	3	4	5	6
24.	I summarize what I've learned after I finish.	1	2	3	4	5	6
25.	I ask others for help when I don't understand something.	1	2	3	4	5	6
26.	I can motivate myself to learn when I need to.	1	2	3	4	5	6
27.	I am aware of what strategies I use when I study.	1	2	3	4	5	6
28.	I find myself analyzing the usefulness of strategies when I study.	1	2	3	4	5	6
29.	I use my intellectual strengths to compensate for my weaknesses.	1	2	3	4	5	6
30.	I focus on the meaning and significance of new information.	1	2	3	4	5	6
31.	I create my own examples to make information more meaningful.	1	2	3	4	5	6
32.	I am a good judge of how well I understand something.	1	2	3	4	5	6
33.	I find myself using helpful learning strategies automatically.	1	2	3	4	5	6
34.	I find myself pausing regularly to check my comprehension.	1	2	3	4	5	6
35.	I know when each strategy I use will be more effective.	1	2	3	4	5	6
36.	I ask myself how well I accomplished my goals once I'm finished.	1	2	3	4	5	6
37.	I draw pictures or diagrams to help me understand when learning.	1	2	3	4	5	6
38.	I ask myself if I have considered all options after I solve a problem.	1	2	3	4	5	6
39.	I try to translate new information into my own words.	1	2	3	4	5	6
40.	I change strategies when I fail to understand.	1	2	3	4	5	6
41.	I use the organizational structure of the text to help me learn.	1	2	3	4	5	6

		Strongly Disagree					**Strongly Agree**
42.	I read instructions carefully before I begin a task.	1	2	3	4	5	6
43.	I ask myself if what I'm reading is related to what I already know.	1	2	3	4	5	6
44.	I reevaluate my assumptions when I get confused.	1	2	3	4	5	6
45.	I organize my time to best accomplish my goals	1	2	3	4	5	6
46.	I learn more when I am interested in the topic.	1	2	3	4	5	6
47.	I try to break studying down into smaller steps.	1	2	3	4	5	6
48.	I focus on overall meaning than specifics.	1	2	3	4	5	6
49.	I ask myself questions about how well I am doing when learning something new.	1	2	3	4	5	6
50.	I ask myself if I learned as much as I could have once I finish a task.	1	2	3	4	5	6
51.	I stop and go back over new information that is not clear.	1	2	3	4	5	6
52.	I stop and reread when I get confused.	1	2	3	4	5	6

Descriptive Statistics

Table J-1. Academic Performance.

Statistic	Academic Grade
Mean	86.33
Median	86.67
Mode	84.67
SD	4.93
Minimum	72.67
Maximum	96.67
Total	157

Demographic Questionnaire Items

Table J-2. Participant Rank.

Rank	Frequency	Percent
Private	24	15.3
Corporal	1	.60
Sergeant	70	44.60
Staff Sergeant	21	13.40
Sergeant 1st Class	8	5.10
Missing	33	21.0
Total	157	100.00

Table J-3. Service Time and Type in Months.

Statistics	Active	Reserve	National Guard	Total Time
Mean	71.18	63.48	55.89	86.52
Median	62.00	66.00	37.00	84.00
Mode	4.00	24.00	36.00	4.00
SD	57.78	46.93	43.97	68.25
Minimum	3	2	8.00	3
Maximum	264	181	187	299
Missing	31	130	110	155
Total	126	27	47	2

Table J-4. Number of Prior Military Courses.

Number of Courses	Frequency	Percent
0	57	36.30
1	28	17.80
2	35	22.30
3	20	12.70
4	8	5.10
5	5	3.20
6	2	1.30
7	1	.60
9	1	.60
Total	157	100.00

Table J-5. Amount of Civilian Education.

Educational Level	Frequency	Percent
Some high school	1	.60
High School	66	42.00
Associates	39	24.80
Bachelors	41	26.10
Masters	4	2.50
Missing	6	3.80
Total	151	100.00

Table J-6. Atypical MOS Job.

Response	Frequency	Percent
No	102	65.00
Yes	49	31.20
Missing	6	3.80
Total	157	100.00

Table J-7. Combat/Deployment Experience.

Response	Frequency	Percent
No	59	38.90
Yes	98	61.10
Total	157	100.00

Table J-8. Location of Combat/Deployment Experience.*

Location	Frequency	Percent
Iraq	51	52.04
Afghanistan	11	11.22
Kuwait	2	2.05
Iraq & Afghanistan	6	6.12
Iraq & Kuwait	10	10.20
Iraq & Afghanistan & Kuwait	8	8.17
Afghanistan & Kuwait	1	1.02
Other	5	5.10
Missing	4	4.08
Total	98	100.00

*Note: Missing cases = deployment experience indicated but no locations chosen.

Table J-9. Length of Deployment in Months.

Statistic	Months
Mean	19.43
Median	15.00
Mode	12
SD	13.64
Minimum	4
Maximum	108
Missing	5
Total	93

Previous Duties, Responsibilities, and Experiences Questionnaire Items

Table J-10. Have You Made a Formal Presentation to a Group of People?

Response	Frequency	Percent
No	11	7.00
Yes	146	93.00
Total	157	100.00

Table J-11. How Many Times Have You Done This?

Response	Frequency	Percent
<5	14	9.59
5-10	33	22.60
10-20	28	19.18
>20	69	47.26
Missing	2	1.37
Total	146	100.00

Table J-12. Were the Presentations to an Audience Familiar with the Subject?

Response	Frequency	Percent
No	36	24.66
Yes	109	74.66
Missing	1	.68
Total	146	100.00

Table J-13. Were You Involved in Writing or Developing the Material?

Response	Frequency	Percent
No	16	10.96
Yes	128	87.67
Missing	2	1.37
Total	146	100.00

Table J-14. Have You Been Responsible for the Actions of a Group of People?

Response	Frequency	Percent
No	13	8.30
Yes	144	91.70
Total	157	100.00

Table J-15. Was This a Role Assigned to You?

Response	Frequency	Percent
No	4	2.78
Yes	137	95.14
Total	144	100.00

Table J-16. How Many Individuals Were You Responsible For?

Response	Frequency	Percent
<5	13	9.03
5-10	49	34.03
10-20	34	23.61
>20	45	31.25
Missing	3	2.08
Total	144	100.00

Table J-17. How Long Were You in This Position (in Months)?

Statistic	Months
Mean	30.19
Median	24.00
Mode	12.00
SD	25.95
Minimum	2
Maximum	120
Missing	19
Total	144

Table J-18. Have you prepared briefings for presentation to management?

Response	Frequency	Percent
No	57	36.30
Yes	100	63.70
Total	100	100.00

Table J-19. Were You Involved in Collecting the Content Material?

Response	Frequency	Percent
No	5	5.00
Yes	95	95.00
Total	100	100.00

Table J-20. Did You Develop Some or All of the Material?

Response	Frequency	Percent
No	9	9.00
Yes	90	90.00
Missing	1	1.00
Total	100	100.00

Table J-21. Did You Personally Analyze the Information?

Response	Frequency	Percent
No	11	11.00
Yes	88	88.00
Missing	1	1.00
Total	100	100.00

Table J-22. Did You Offer Any Recommendations or Solutions?

Response	Frequency	Percent
No	9	9.00
Yes	89	89.00
Missing	2	2.00
Total	100	100.00

Table J-23. Have You Planned and/or Executed Training Events?

Response	Frequency	Percent
No	43	27.40
Yes	114	72.60
Total	157	100.00

Table J-24. How Many Times Have You Done This for Field or Other Practical Application Exercises?

Response	Frequency	Percent
<5	34	29.82
5-10	22	19.31
10-20	21	18.42
>20	35	30.70
Missing	2	1.75
Total	114	100.00

Table J-25. How Many Times Have You Done This for Classroom Instruction?

Response	Frequency	Percent
<5	28	24.55
5-10	30	26.32
10-20	21	18.42
>20	30	26.32
Missing	5	4.39
Total	114	100.00

Table J-26. Did You Lead the Training Yourself (Were You an Instructor)?

Response	Frequency	Percent
No	9	7.90
Yes	105	92.10
Total	114	100.00

Table J-27. Was the Training Evaluated?

Response	Frequency	Percent
No	40	35.09
Yes	74	64.91
Total	114	100.00

Table J-28. Are You Fluent in More Than One Foreign Language?

Response	Frequency	Percent
No	140	89.20
Yes	16	10.20
Missing	1	.60
Total	157	100.00

Table J-29. If Yes, Did You Learn the Other Language(s) On Your Own?

Response	Frequency	Percent
No	9	52.95
Yes	6	35.29
Missing	2	11.76
Total	17	100.00

Table J-30. If Yes, Did You Learn the Other Language(s) Because Your Family Spoke More than One Language?

Response	Frequency	Percent
No	8	47.06
Yes	9	52.94
Total	17	100.00

Table J-31. If Yes, Did You Learn the Other Language(s) to Fulfill a Class Requirement?

Response	Frequency	Percent
No	13	76.48
Yes	2	11.76
Missing	2	11.76
Total	17	100.00

Table J-32. Have You Had to Perform Assignments That Fell Outside of Your MOS or Job Description?

Response	Frequency	Percent
No	45	28.70
Yes	111	70.70
Missing	1	.60
Total	157	100.00

Table J-33. Is This Something That Was Asked of You?

Response	Frequency	Percent
No	18	16.22
Yes	93	83.78
Total	111	100.00

Table J-34. Did This Require You to Learn Something New?

Response	Frequency	Percent
No	11	9.91
Yes	100	90.09
Total	111	100.00

Table J-35. If Yes, Did You Feel Comfortable Working Outside Your Specialty Area?

Response	Frequency	Percent
No	9	8.11
Yes	101	90.99
Missing	1	.90
Total	111	100.00

Table J-36. Have You Been a Mentor?

Response	Frequency	Percent
No	60	38.20
Yes	97	61.80
Total	157	100.00

Table J-37. If Yes, Did You Benefit From This Relationship?

Response	Frequency	Percent
No	6	6.19
Yes	90	92.78
Missing	1	1.03
Total	97	100.00

Table J-38. If Yes, Did You Initiate the Relationship?

Response	Frequency	Percent
No	36	37.11
Yes	56	57.73
Missing	5	5.16
Total	97	100.00

Table J-39. Have You Previously Had to Analyze Large Amounts of Data or Information?

Response	Frequency	Percent
No	58	36.90
Yes	98	62.40
Missing	1	.60
Total	157	100.00

Table J-40. If Yes, Did You Find That You Were Skilled At Doing This?

Response	Frequency	Percent
No	15	15.30
Yes	82	83.70
Missing	1	1.00
Total	98	100.00

Table J-41. If Yes, Did This Require You to Pay Close Attention to Details?

Response	Frequency	Percent
No	3	3.10
Yes	95	96.90
Total	98	100.00

Table J-42. Was This on a Topic You Were Familiar With?

Response	Frequency	Percent
No	17	17.30
Yes	81	82.70
Total	98	100.00

Table J-43. Is This Something You Did On a Frequent Basis?

Response	Frequency	Percent
No	23	23.50
Yes	74	75.50
Missing	1	1.00
Total	98	100.00

Table J-44. If Yes, How Often Did You Do This?

Response	Frequency	Percent
Daily	23	31.08
Several Times a Week	23	31.08
Once a Week	13	17.57
Once a Month	15	20.27
Total	74	100.00

Table J-45. Has Your Previous Job Performance Been Evaluated?

Response	Frequency	Percent
No	21	13.40
Yes	136	86.60
Total	157	100.00

Table J-46. If Yes, Did You Change or Alter the Way You Approach Work Based Upon the Feedback You Received?

Response	Frequency	Percent
No	37	27.20
Yes	97	71.30
Missing	2	1.50
Total	136	100.00

Table J-47. If Yes, Do You Compare Your Performance Level With Those Around You?

Response	Frequency	Percent
No	27	19.90
Yes	109	80.10
Total	136	100.00

Table J-48. Besides debriefings or AARs, do you ever review your own performance
and think about how you could improve your performance next time?

Response	Frequency	Percent
No	12	7.60
Yes	145	92.40
Total	157	100.00

Table J-49. If Yes, Are you skilled at critiquing your own performance?

Response	Frequency	Percent
No	32	22.10
Yes	112	77.20
Missing	1	.70
Total	145	100.00

Table J-50. If Yes, Does your performance seem to improve after thinking through new strategies?

Response	Frequency	Percent
No	6	4.10
Yes	138	95.20
Missing	1	.70
Total	145	100.00

Table J-51. Do you like to receive feedback on your performance?

Response	Frequency	Percent
No	3	1.90
Yes	153	97.50
Missing	1	.60
Total	157	100.00

Table J-52. If yes, is this something you actively seek out?

Response	Frequency	Percent
No	40	26.10
Yes	111	72.50
Missing	2	1.30
Total	153	100.00

Table J-53. Have you ever held a leadership position?

Response	Frequency	Percent
No	6	3.80
Yes	151	96.20
Total	157	100.00

Table J-54. If yes, have you ever taken charge of a group in the absence of the leader?

Response	Frequency	Percent
No	8	5.30
Yes	143	94.70
Total	151	100.00

Table J-55. If yes, has a group ever designated you as its leader, either through formal or informal selection?

Response	Frequency	Percent
No	25	16.60
Yes	125	82.80
Missing	1	.70
Total	151	100.00

Table J-56. Do you find yourself thinking of new ways to improve products or processes?

Response	Frequency	Percent
No	11	7.00
Yes	146	93.00
Total	157	100.00

Table J-57. If yes, do you suggest these changes?

Response	Frequency	Percent
No	16	11.00
Yes	128	87.70
Missing	2	1.40
Total	146	100.00

Table J-58. Do you regularly raise your hand in class?

Response	Frequency	Percent
No	64	40.80
Yes	93	59.20
Total	157	100.00

Table J-59. If yes, do you primarily (mark one with an X).

Response	Frequency	Percent
Raise comments	48	51.60
Ask questions	23	24.70
Seek Clarification	17	18.30
Missing	5	5.40
Total	93	100.00

Table J-60. Do you regularly view an online professional forum, such as Army Knowledge Online or themotorpool.com?

Response	Frequency	Percent
No	71	45.20
Yes	86	54.80
Total	157	100.00

Table J-61. If yes, how often do you view the site? (Mark one with an X).

Response	Frequency	Percent
Daily	18	20.90
Several times a week	48	55.80
Once a week	14	16.30
Once a month	4	4.70
Missing	2	2.30
Total	86	100.00

Table J-62. If yes, do you contribute your own thoughts or ideas to the forum?

Response	Frequency	Percent
No	37	43.00
Yes	36	41.90
Missing	13	15.10
Total	86	100.00

Table J-63. Do you voluntarily participate in continuing education programs through the Army Education Center?

Response	Frequency	Percent
No	104	66.20
Yes	50	31.80
Missing	3	1.90
Total	157	100.00

Table J-64. If yes, how often do you do this? (Mark one with an X)

Response	Frequency	Percent
1 course per year	9	18.00
2-3 courses per year	20	40.00
4 or more courses per year	18	36.00
Missing	3	6.00
Total	50	100.00

Table J-65. Do you regularly write in a personal journal?

Responses	Frequency	Percent
No	133	84.70
Yes	24	15.30
Total	157	100.00

Table J-66. If yes, what is your primary reason for doing this?

Response	Frequency	Percent
Done since young	3	12.50
Improve Skills	2	8.30
Keep tract of performance	2	8.30
Reflection	15	62.50
Missing	2	8.30
Total	24	100.00

Table J-67. During your last marksmanship qualification, did you qualify as an expert?

Response	Frequency	Percent
No	89	56.70
Yes	67	42.70
Missing	1	.60
Total	157	100.00

Table J-68. Have you ever been an honor graduate in a military or civilian course?

Response	Frequency	Percent
No	79	50.30
Yes	78	49.70
Total	157	100.00

Correlations

Table K-1. Correlation Matrix for 5-Week Class.

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	.16	.04	.18	.03	**.28**	.12	.02	.20	.08	.03	.02	.15	.11	.14	.22	.22	.11	.10	.14	.18	.00
2	---	**.47**	**.33**	.25	.05	.18	.31	.16	**.40**	.26	.07	.07	.02	.26	.11	.16	.15	.19	.01	.16	.10
3		---	.11	**.32**	.08	.16	.21	.01	.09	.22	.03	.12	**.32**	.09	.02	.11	.21	.05	.02	.16	.15
4			---	.01	.10	.08	**.32**	.04	.18	.08	**.37**	.14	.11	.13	.10	.06	.05	.02	**.24**	.10	.15
5				---	.01	.05	**.33**	**.25**	.03	.17	.22	.07	**.29**	.04	.03	.01	.09	.01	.16	.12	.06
6					---	.11	.00	.02	.08	.16	.12	.13	.23	.05	.15	.22	.07	.03	.07	.02	.11
7						---	.10	.03	.06	.10	.09	**.27**	.16	.07	.06	.12	.03	.15	.02	.05	.02
8							---	**.48**	.17	.10	**.34**	.21	.10	.19	.12	.18	.05	.00	.10	.23	.16
9								---	.14	.10	.00	.13	.16	.08	.05	.03	.14	.05	.02	.16	.16
10									---	.17	.03	.04	.00	.24	.20	.07	.17	.14	.03	.06	.05
11										---	.18	.11	.19	.11	.20	.16	.16	.15	.04	.09	**.29**
12											---	.07	.07	.13	.02	.10	.05	.05	.01	.11	.02
13												---	.05	.21	.16	.12	.05	.23	.18	.02	**.34**
14													---	.11	.09	.04	.04	.01	.17	.16	.04
15														---	.03	.10	.20	.02	.00	.06	.00
16															---	.16	.08	.19	.08	.09	.08
17																---	.18	.20	.23	**.54**	.07
18																	---	.13	.05	**.29**	.06
19																		---	.13	.08	.13
20																			---	.13	.04
21																				---	.09
22																					---

Bold=correlations $p < .05$.
Underlined=correlation negative.
Ns ranged from 35 to 67, with most being above 60.

1= Academic Performance
2= Rank
3= Total Time in Service (Months)
4= Number of Previous Military Courses Taken
5= Highest Level of Civilian Education
6= Previously Performed Job Atypical of MOS
7= Combat/Deployment Experience
8= Prepared Briefs for Presentation to Management
9= Planned/Executed Training Events
10= Performed Job Outside MOS
11= Been a Mentor
12= Previously Analyzed Large Amounts of Data/Information
13= Raise Hand During Class
14= View Online Forum
15= Take Continuing Education Courses Through the Army Education Center
16= Expert Status in Last Marksmanship Event
17= Previous Experience Scale
18= Learning Goal Orientation
19= Situational Judgment Test
20= Attention to Detail (Errors in Op Order)
21= Metacognitive Awareness Inventory
22=Previous Honor Graduate

Table K-2. Correlation Matrix for 7-Week Class.

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	.15	<u>.07</u>	<u>.03</u>	**.26**	<u>.10</u>	.01	<u>.07</u>	.08	.19	<u>.02</u>	.14	.03	.02	<u>.13</u>	<u>.03</u>	<u>.06</u>	<u>.12</u>	.05	.20	**<u>.24</u>**	**.40**
2	---	<u>.03</u>	<u>.02</u>	.09	.10	.01	**.22**	.15	<u>.02</u>	<u>.15</u>	.09	.13	.05	<u>.02</u>	<u>.05</u>	<u>.01</u>	<u>.04</u>	.04	<u>.08</u>	.05	.09
3		---	**.63**	.02	.18	**.62**	**.22**	**.23**	**.31**	**.26**	<u>.08</u>	.19	.14	**.26**	.18	.08	.08	<u>.01</u>	<u>.07</u>	.18	.18
4			---	.03	.03	**.44**	**.22**	**.24**	**.21**	**.29**	<u>.08</u>	.10	**.31**	**.36**	.20	.13	.06	.00	.04	.20	.09
5				---	.02	<u>.07</u>	**.25**	.15	.07	.05	**.30**	.02	<u>.12</u>	.01	.02	<u>.04</u>	<u>.21</u>	<u>.23</u>	.21	.10	.13
6					---	.05	.11	.04	**.27**	.19	**.27**	<u>.04</u>	.10	<u>.02</u>	<u>.02</u>	<u>.02</u>	<u>.13</u>	<u>.06</u>	<u>.09</u>	.02	<u>.10</u>
7						---	.10	**.25**	**.34**	.11	.05	.18	.03	**.24**	.20	.02	.05	.05	<u>.12</u>	.08	.17
8							---	**.38**	.17	.18	**.26**	**.24**	.08	.17	.06	**.32**	<u>.01</u>	.13	.08	.15	.16
9								---	.15	.19	.15	.20	.06	.17	.17	**.22**	.02	.17	.04	.19	.14
10									---	**.27**	**.25**	**.23**	.18	.16	.08	.09	<u>.20</u>	.04	.01	.13	.12
11										---	.07	**.22**	**.27**	.02	.08	**.30**	.08	.14	.01	.07	<u>.05</u>
12											---	.04	<u>.01</u>	.09	<u>.06</u>	.10	<u>.09</u>	.13	.14	.04	.03
13												---	**.21**	**.24**	**.22**	**.32**	.12	.04	<u>.16</u>	**.25**	.03
14													---	**.23**	.04	**.27**	**.21**	.07	.08	.21	.09
15														---	.16	.20	.17	<u>.11</u>	<u>.10</u>	.11	.18
16															---	.14	<u>.05</u>	.01	<u>.11</u>	.14	<u>.09</u>
17																---	**.35**	.19	.13	**.45**	.07
18																	---	<u>.03</u>	<u>.04</u>	.19	.08
19																		---	.18	.12	<u>.08</u>
20																			---	.07	<u>.03</u>
21																				---	**.32**
22																					---

Bold=correlations *p* < .05.
Underlined=correlation negative.
*N*s ranged from 82 to 90.

1= Academic Performance
2= Rank
3= Total Time in Service (Months)
4= Number of Previous Military Courses Taken
5= Highest Level of Civilian Education
6= Previously Performed Job Atypical of MOS
7= Combat/Deployment Experience
8= Prepared Briefs for Presentation to Management
9= Planned/Executed Training Events
10= Performed Job Outside MOS
11= Been a Mentor
12= Previously Analyzed Large Amounts of Data/Information
13= Raise Hand During Class
14= View Online Forum
15= Take Continuing Education Courses Through the Army Education Center
16= Expert Status in Last Marksmanship Event
17= Previous Experience Scale
18= Learning Goal Orientation
19= Situational Judgment Test
20= Attention to Detail (Errors in Op Order)
21= Metacognitive Awareness Inventory
22=Previous Honor Graduate

Appendix L

Principal Components Analysis

Table L-1. First Principal Components of 5-week and 7-week Course.

Variables	First PC	
	5-week	7-week
Academic Performance	**-.54**	**.36**
Rank	**.48**	.14
Total Time in Service	**.32**	**.66**
Total Previous Military Courses	-.26	**.67**
Amount of Civilian Education	**.30**	.21
Atypical MOS Job	.25	.03
Combat/Deployment Experience	-.02	**.58**
Prepared Briefings for Presentation to Management	**.70**	**.53**
Planned/Executed Training Events	**.56**	**.52**
Performed Jobs Outside MOS	**.48**	**.49**
Been a Mentor	**.56**	**.47**
Previously Analyzed Large Amounts of Data	**.42**	.20
Raise Hand in Class	.18	**.49**
View Online Forum	**.36**	**.50**
Take Courses Through Army Center of Education	**.35**	**.46**
Expert Marksmanship Status	**.30**	**.32**
Previous Experience Scale	-.19	**.52**
Learning Goal Orientation	.24	**.30**
Situational Judgment Test	**-.36**	.24
Attention to Detail	**-.53**	.03
MAI	-.20	**.51**
Previous Honor Graduate	.00	**.52**
% of Total Variance	14.91	19.17

Appendix M

Regression Analysis

Table M-1.

Predictors of Academic Performance for 7-week Course

Variable	Simultaneous Model B	Stepwise Model B
MAI	.15	----
Amount Civilian Education	.24*	.24*
Honor Graduate	.27*	.31**
R	.45	.43
R^2	.20	.18
Adjusted R^2	.17	.16
F	6.33**	8.51**

$N = 79$.
$*p < .05.$ $** p < .01.$